Bassett Creek Watershed Management Commission

A g e n d a

11:30 a.m., Thursday, September 23, 2010
Golden Valley City Hall – 7800 Golden Valley Road, Golden Valley 55427

1. **CALL TO ORDER**
2. **APPROVAL OF AGENDA AND CONSENT AGENDA - Items marked with an asterisk (*) will be acted on by consent with one motion unless a commissioner requests the item be removed from the consent agenda.**
3. **CITIZEN INPUT ON NON-AGENDA ITEMS**
4. **ADMINISTRATION**
   - **A. Presentation of August 19, 2010, Meeting Minutes ***
   - **B. Presentation of Financial Statements ***
   - **C. Presentation of Invoices for Payment Approval**
     - **i. Kennedy & Graven – Legal Services thru July 31, 2010**
     - **ii. Barr Engineering – Engineering Services thru August 27, 2010**
     - **iii. Watershed Consulting, LLC– Geoff Nash Administrator Services thru August 31, 2010**
     - **iv. Amy Herbert – August Administrative Services**
     - **v. D'amico Catering - September 2010 Meeting Catering**
     - **vi. Southdale MiniPrint – BCWMC Letterhead**
5. **PUBLIC HEARING – Receive Public Testimony and Comments of Member Cities Regarding the Proposed Main Stem Channel Restoration Project and the Proposed North Branch Channel Restoration Project**
6. **NEW BUSINESS**
   - **A. Resolution 10-07 Approving Watershed Plan Amendment and Resolution 10-08 Ordering 2010 Improvements and Designating Members Responsible for Construction of the Main Stem and the North Branch Channel Restoration Projects *(see Resolutions 10-07 and 10-08)***
   - **B. Certification of Levy to Hennepin County *(see9/15 Barr memo and see levy certification)***
   - **C. City of Plymouth Reimbursement Request for West Medicine Lake Park Pond *(see request)***
7. **OLD BUSINESS**
   - **A. TAC Recommendations (*see TAC memo)***
     - **i. Standardization of BCWMC and member cities data collection**
     - **ii. Sweeney Lake Outlet**
     - **iii. Next Generation Plan Issues Update**
     - **iv. New Hope Noise Wall and Culvert Replacement/ Pond Project**
   - **B. TMDL Updates:**
     - **i. Sweeney Lake TMDL *(verbal update)***
     - **ii. Medicine Lake TMDL (*see August 26th MPCA letter)***
     - **iii. Wirth Lake TMDL *(verbal update)***
   - **C. Ownership of the BCWMC's Web Site (*verbal update)***
   - **D. Commissioners' Roles in BCWMC *Watershed Management Plan* Revision**
   - **E. Working Paper on Possible Alternate Funding Methods for BCMWC's CIP**
   - **F. Education Committee (*see 9/10/10 meeting minutes)***
8. **COMMUNICATIONS**
   - **A. Chair**
   - **B. Administrator (*see Administrator's report)***
   - **C. Commissioners**
   - **D. Committees**
   - **E. Counsel ***
   - **F. Engineer**
9. **ADJOURNMENT**

Item 4A

Bassett Creek Watershed Management Commission
Minutes of the Meeting of August 19, 2010

1. Call to Order

The Bassett Creek Watershed Management Commission (BCWMC) was called to order at 11:35 a.m., Thursday, August 19, 2010, at Golden Valley City Hall by Chair Loomis. Ms. Herbert conducted roll call.

Roll Call

Crystal	**Commissioner Pauline Langsdorf, Secretary**	***Administrator***	**Geoff Nash**
Golden Valley	**Commissioner Linda Loomis, Chair**	***Counsel***	**Charlie LeFevere**
Medicine Lake	**Commissioner Ted Hoshal**	***Engineer***	**Len Kremer**
Minneapolis	**Alternate Commissioner Lisa Goddard**	***Recorder***	**Amy Herbert**
Minnetonka	**Commissioner Bonnie Harper-Lore**		
New Hope	**Alternate Commissioner Al Sarvi**		
Plymouth	**Commissioner Ginny Black, Vice Chair**		
Robbinsdale	**Commissioner Wayne Sicora**		
St. Louis Park	**Commissioner Jim deLambert**		

Arrived after roll call: **New Hope Commissioner John Elder**

Also present:
Laura Adler, BCWMC Technical Advisory Committee, City of St. Louis Park
Pat Byrne, BCWMC Technical Advisory Committee, City of Minneapolis
Jeannine Clancy, BCWMC Technical Advisory Committee, City of Golden Valley
Kari Geurts, Golden Valley Resident
Dave Hanson, Alternate Commissioner, City of Golden Valley
Tom Mathisen, BCWMC Technical Advisory Committee, City of Crystal
Justin Riss, Alternate Commissioner, City of St. Louis Park
Kevin Springob, Plymouth
Stu Stockhaus, Alternate Commissioner, City of Crystal
Liz Stout, BCWMC Technical Advisory Committee, City of Minnetonka
Liz Thornton, Alternate Commissioner, City of Plymouth
Jeff Weiss, Barr Engineering Company

2. Approval of Agenda and Consent Agenda

Commissioner Black moved to approve the Agenda and Consent Agenda. Alternate Commissioner Goddard seconded the motion. The motion carried unanimously with nine votes in favor.

3. Citizen Input on Non-Agenda Items

Ms. Kari Geurts, on behalf of the Caroline's Kids Foundation and the Hidden Lakes Neighborhood in Golden Valley, asked the Commission to entertain a motion to suspend the use of aerators on Sweeney Lake until the TMDL study recommendations have been finalized. Ms. Geurts explained that the rationale for the request is lack of evidence or proof that the aerators are the best mitigating process to address the water quality issues on the lake and that those resources being used for the aerators could be used for an alternate solution.

Chair Loomis said that the Commission can consider the request but typically the Commission would add the issue to a future agenda for any action. She pointed out that there are no Commission resources being used for the aerators and added that the aerators are being handled privately. Chair Loomis explained

that if the use of the aerators was suspended it would not mean that there would be BCWMC money for other action. Commissioner Black commented that the BCWMC likely doesn't have authority over the aerators and that instead the authorizing body is likely the Minnesota Department of Natural Resources (DNR).

Mr. Kremer confirmed that aeration systems are regulated by the DNR. Chair Loomis stated that the Commission would not be able to take action over the use of the aerators. Mr. Kremer commented that the Commission would not be able to take action but there would be a possibility of an MS4 taking action in the future since testing of the lake will be required in the future, such as for the 2011 MS4 permit. He said that testing can't occur when the aerators are operating.

Ms. Loomis stated that when the Commission adds the topic to a future meeting agenda the Commission will notify Ms. Geurts and the Caroline's Kids Foundation and a contact for the Hidden Lakes neighborhood.

4. Administration

A. Presentation of the July 15, 2010, BCWMC meeting minutes. Approved under the Consent Agenda.

B. Presentation of the Financial Statement. Approved under the Consent Agenda.

The general and construction account balances as reported in the August 2010 Financial Report:

Checking Account Balance	**552,788.44**
TOTAL GENERAL FUND BALANCE	**552,788.44**
Construction Account Cash Balance	**2,971,562.95**
Investment due 10/18/2010	**533,957.50**
TOTAL CONSTRUCTION ACCOUNT BALANCE	**3,505,520.45**
-Less: Reserved for CIP projects	**2,712,691.88**
Construction cash/ investments available for projects	**792,828.57**

C. Presentation of Invoices for Payment Approval.

Invoices:

i. Kennedy & Graven – Legal Services through June 30, 2010 - invoice for the amount of $1,751.22.

ii. Barr Engineering Company – Engineering Services through July 30, 2010 - invoice for the amount of $57,731.27.

iii. Watershed Consulting, LLC – Administrator Services through July 31, 2010 – invoice for the amount of $2,627.09.

iv. Amy Herbert – July Administrative Services - invoice for the amount of $1,775.38.

v. D'amico Catering – August 2010 meeting catering – invoice for the amount of $384.74.

vi. Shingle Creek – Joint Sponsorship of Metro Blooms Rain Garden Workshops – invoice for the amount of $2,000.00.

Commissioner Black requested a separate breakout of Barr Engineering's cost per feasibility study and said the information can be e-mailed to her. Mr. Kremer said he can get that information to the Commission. Commissioner Black moved to approve payment of the invoices. Commissioner Hoshal seconded the motion. The motion carried unanimously.

5. Public Hearing

Chair Loomis explained that today's public hearing was being held in order to receive public testimony and comments of member cities regarding the proposed major plan amendment to the BCWMC's *Watershed Management Plan*, which comprised the following proposed Capital Improvement (CIP) projects:

- **Restore the Main Stem of Bassett Creek in the City of Golden Valley from Wisconsin Avenue to Rhode Island Avenue and from Duluth Street to the Golden Valley – Crystal boundary.**
- **Restore the channel of the North Branch of Bassett Creek in the City of Crystal from 32nd Avenue North to Douglas Drive North.**

[Commissioner Elder arrived].

Mr. Jeff Weiss gave a presentation that summarized the draft feasibility report for the Main Stem restoration project. He noted that the project's cost estimate of $610,800 as documented in the feasibility study, is lower than the estimate in the current CIP because the project scope was revised to not include the restoration of reach two of the Main Stem. This reach was not included because the City communicated that it is not ready to implement the project on that reach of the Creek. He added that the cost estimate includes design and construction costs and factors in costs related to some right-of-way acquisition from commercial properties, costs related to testing of excavated materials and a conservative estimate of 50% of excavated materials needing to be handled as hazardous materials, costs related to an archeological investigation, and the identification of four additional restoration sites along the Main Stem.

Mr. Weiss stated that he recommends that the Commission take action to move the project forward and to modify the Commission's CIP to reflect the change in the project cost estimate.

Commissioner Black noted that there were discrepancies between the text and tables one and two regarding the tree loss number. She commented that the text of the report and the appendix do not address whether there would be any wetland mitigation necessary and if there would be a project cost associated with mitigation. Mr. Kremer responded that for both projects being discussed today the Engineer anticipates that the stream restoration will self mitigate the wetland loss and that there will be no mitigation costs. He said that the information can be included in the report. Commissioner Black asked if the City agrees with the additional sites included in the project. Ms. Clancy replied that the City has not had time to review the information in detail and would like the opportunity to do so. Commissioner Black added that the text of the report doesn't delineate which sites are the four new ones and she would like the report to include that information.

Commissioner Black commented on the report's assumption that 50% of the soils would be found to be contaminated and asked what contaminates the soils. Mr. Kremer responded that the assumption was based on the history of projects in Golden Valley and what the City has encountered in the past regarding the amount of contaminated soils it has had to deal with in projects such as street reconstruction and pond excavation. He said the typical contamination found in soil samples has been PAH compounds. Ms. Clancy asked how many soil samples were budgeted for the project. Mr. Weiss responded that the cost did not assume a certain number of samples. Ms. Clancy asked that the Engineer consider the number of sites that should be sampled.

Commissioner Hoshal asked about the life expectancy of the restoration projects. Mr. Weiss responded that it should be 25 years or more with the use of the rock vanes and the rip rap and that the biologs last five years and by then vegetation should be established. Commissioner deLambert remarked that it would be helpful if the report included information explaining the yardage of contaminated soil that would need to be disposed of a hazardous material. Mr. Kremer stated that Barr Engineering can add the requested information to the feasibility study report prior to the BCWMC's September 23rd public hearing on the projects.

Mr. LeFevere remarked that in the past for CIP projects the Commission has entered into a contract with the City, which then acts as the implementing agency on the project. He added that the City, as part of its contract, does the design and prepares the plans and specs. Mr. LeFevere said that if the Commission wants to take upon itself the responsibility for creating a design at the level of detail being discussed by the Commission, which has typically been the responsibility of the cities, then the Commission should clarify its role right away. Mr. Kremer said that as Commission Engineer he would not recommend the Commission take on that role and would instead recommend that the Commission follow the process it has followed in the past and designate a City to complete the project. Mr. LeFevere commented that the Commission doesn't typically see the final design, specs, and bidding documents.

Commissioner Black requested that clarification on the contaminated soils be added to the report and to add information on whether the costs for the cultural and historical investigation are included in the cost estimate and that more information be added about the wetland mitigation and the assumptions made regarding those costs. Chair Loomis commented that there is a reference in the report to the North Branch and asked that the data and labels be reviewed for accuracy.

Chair Loomis opened the public hearing and asked for comments. Chair Loomis hearing no comments closed the public hearing.

Chair Loomis raised the issue of City of Golden Valley policy issues and Commission policy issues regarding inequities of the Commission paying the cost for Creek restoration when some cities have cost share programs and some don't. She said there is also a potential issue given that some residents have participated in channel restoration through the cost share program in Golden Valley and now the Commission is considering restoring the creek without resident participation in the cost. Chair Loomis also raised the issue of maintenance of the restoration projects. She said she doesn't have a problem with having the projects in the BCWMC's CIP but she isn't sure that the City of Golden Valley is willing to move forward with the projects without City Council discussion of the policy issues. Commissioner Black remarked that she is willing to put the projects on the Commission's CIP and to try to have the City and the Commission work out the policy issues.

Commissioner Black moved to approve this project as part of the proposed major plan amendment and to forward the project as part of the amendment to the Minnesota Board of Water and Soil Resources (BWSR) for final approval. Alternate Commissioner Goddard seconded the motion. <u>The motion carried unanimously with nine votes in favor.</u>

[Commissioner Elder replaced Alternate Commissioner Sarvi as the voting member for the City of New Hope for the remainder of the meeting].

Mr. Weiss gave a presentation that summarized the North Branch restoration project. He reported that the cost estimate is $896,900, which is larger than the estimate in the BCWMC's current CIP for the reasons that the new estimate includes four additional sites compared to the number of sites included in the City's streambank inventory and that there is a contingency built in to ensure that there is enough money to complete the project. He said that this project also assumed that 50% of the soils would have to be disposed of off site. Mr. Weiss explained that the cost estimate includes construction easement costs of $20,000, or $1,000 per site. He said that Barr Engineering recommends that the Commission take action to move forward with the project and to revise the Commission's CIP to reflect the

increased cost estimate.

Mr. Mathisen commented that the assumption that 50% of the soils would be contaminated and would have to be disposed of off site seems very conservative and asked that Barr Engineering take a hard look to see if that assumption could be reduced to 30%. Mr. Kremer said that 50% is based on input from the City of Golden Valley and therefore he thinks that 50% is a good assumption.

Commissioner Black asked the Commission Engineer to provide for the September meeting information on how much money the BCWMC will be receiving in grant funds and how much money is in the Commission's CIP Reserve since these projects will be partially funded by the reserve and grant funds.

Commissioner Hoshal commented on a detail on page 14 of the report that discusses the Local Governmental Unit (LGU) of the project. He stated that the LGU should be identified as the City of Crystal. He also made a recommendation that the Commission budget 2% of a project's cost to educate the public on how to manage property in riparian zones. Chair Loomis remarked that a problem the City of Golden Valley has encountered with education programs is that property owners move. Commissioner Black requested that the feasibility report be updated to reflect consistency with the tree loss data, to include more details about the assumptions about wetland mitigation, and to identify the four additional sites and all the costs included in the cost estimate. Commissioner Hoshal commented that he would like to see the report discuss the project's tree replacement program. Mr. Weiss remarked that he assumed a two-to-one tree replacement for the project.

Chair Loomis opened the public hearing and asked for comments. Hearing no comments, Chair Loomis closed the public hearing.

Commissioner deLambert moved to approve the project as part of the proposed major plan amendment and to add the project to the Commission's CIP and to forward the project as part of the amendment to BWSR for final approval. Commissioner Elder seconded the motion. The motion carried unanimously with nine votes in favor.

6. New Business

No New Business

7. Old Business

A. Update on 2011 Clean Water Grant Fund Application. Mr. Kremer reported that the Commission Engineer investigated whether BWSR awarded points to grant applications based on the percentage of local participation in the project cost and found out that no points are awarded on that basis. He said his recommendation is that the Commission apply for no more than one-third of the projects' costs based on the total amount of funds available, which is 2.7 million for the entire state of Minnesota. He reminded the Commission that the grant application deadline is September 15.

Mr. Kremer stated that at the July BCWMC meeting the Commission Engineer recommended that the Commission not apply for grant funding for the Wirth Lake outlet structure project because at that time it was uncertain whether the TMDL implementation plan would be approved in time to be eligible for grant funding. Mr. Kremer said he has spoken with Ms. Brooke Asleson of the MPCA who said the implementation plan would likely be approved in time for the project to be eligible for the grant. Mr. Kremer recommended that the BCWMC include the Wirth project in the grant application in addition to the Main Stem and North Branch projects recently discussed in the public hearing. Commissioner Black moved to approve staff to apply for grant

funding for the Wirth Lake outlet structure project in addition to the two restoration projects. Commissioner Harper-Lore seconded the motion. The motion carried unanimously with nine votes in favor.

B. Medicine Lake Outlet. Mr. Kremer reported that he attended the August 2nd Medicine Lake City Council meeting to discuss the City's request that the Commission investigate whether the Medicine Lake Dam releases water too quickly. Mr. Kremer said that the concerns expressed included that some people were having a hard time accessing parts of the lake requiring some residents to build out their docks to reach deeper water. Mr. Kremer said that the structure was designed and built so that for all flows less than the ten-year level the water levels are about the same as prior to the construction, meaning that modification has not affected water flow. Mr. Kremer explained that the issues with modifying the outlet structure are detailed in the memo in the meeting packet. He said that one of the most significant problems with modifying the ten-year flood level is the easement issue and that action to modify the level would require the securing of an easement from each property owner.

He said the Commission Engineer's recommendation is for the Commission to forward the issue to the TAC to review and develop recommended strategies responding to the technical issues.

Commissioner Elder reported that he also attended the council meeting and that there was a strong push from those people in attendance that the Commission dredge Medicine Lake. Mr. Kremer commented that the Commission did investigate adding to its CIP a project to dredge Medicine Lake that would improve water quality and provide better access to the lake. He said that the Commission asked the TAC to get more information from a contractor and ultimately the TAC recommended that the project not be considered by the Commission. Commissioner Black commented that the data clearly indicates that the times in which the residents are experiencing problems with the water levels are the times of drought and that she would be hesitant to change the outlet due to the potential issues for flooding. Chair Loomis said she feels it would be irresponsible for the Commission to raise the flood level of the lake.

Commissioner Harper-Lore moved to not forward the issue to the TAC. Commissioner Black seconded the motion and added the friendly amendment for the Administrator to draft a response letter to the City of Medicine Lake to communicate the Commission's findings. The motion carries with eight votes in favor and one vote against [City of Medicine Lake].

C. Sweeney Lake Outlet. Mr. Kremer reported that at the July meeting the Commission requested additional information about right of way for the structure and Commission responsibility for replacement of the structure. He indicated that the City of Golden Valley owns the property that the current structure is on and the area is big enough to accommodate the new structure that would be built and no additional easements would be needed. He stated that the detailed information regarding Commission responsibility for the structure was in the memo from the Engineer included in the meeting packet. He also reported that the Commission Engineer contacted the DNR to find out what it would want in a letter requesting funding for the project from the Dam Safety Program. Commissioner Black moved to approve staff's recommendation that the TAC review the project, its prioritization, and project schedule as part of the annual CIP review and to authorize staff to prepare a letter to the Minnesota DNR requesting funding assistance from the Minnesota Dam Safety Program for construction of a new Sweeney Lake outlet structure. Commissioner Langsdorf seconded the motion. The motion carried unanimously with nine votes in favor.

D. E. Coli Monitoring. Mr. Kremer stated that the Commission received a memo in the meeting packet summarizing the E. coli monitoring done cooperatively with the MPCA from 2008 to June 2010. He said there were six sites sampled along Bassett Creek, including four sites on the Main

Stem, one on Plymouth Creek, and one on the North Branch. He said the data will be used by the MPCA in its Mississippi River E. coli study currently underway, which was the MPCA's purpose for the joint data collection.

E. TMDL Updates:

i. Wirth Lake TMDL. Administrator Nash remarked that earlier in the meeting the BCWMC discussed adding the Wirth Lake outlet structure to the grant application and that there was no other news to report on this TMDL.

ii. Sweeney Lake TMDL. Administrator Nash reported that the MPCA would like more public involvement in the technical stakeholder meeting but the meeting hasn't been scheduled yet. Chair Loomis said she didn't understand the change in the purpose of the meeting from being a technical stakeholder meeting for the MS4s to discuss the MPCA's numbers for the external and internal load reductions to being a public meeting. Administrator Nash stated that he has sent an agenda to the MPCA regarding what the Commission wants to get out of the meeting and structured the agenda so it would be light on introductory information and would focus on the wasteload allocation issue and the differences between the MPCA's and the BCWMC's load allocations and would also focus on implementation issues.

F. Discuss Commissioners' Roles in Watershed Management Plan Revision. Item tabled until the September BCWMC meeting since no immediate action was necessary and to allow for the participation of Commissioner Welch.

G. Set Agenda for the September BCWMC TAC Meeting. Administrator Nash reported the TAC issues include the Sweeney Lake outlet for the TAC's review when it reviews the CIP and a discussion of standardization of monitoring methods and procedures. Chair Loomis said the TAC had also created a list of issues from the Next Generation Plan process and that the TAC had planned to tackle the issues one or two at a time at each meeting. Administrator Nash remarked that he would start that process by getting a memo out to the cities on the issues. Commissioner Elder said that Mr. Jason Quisberg or Mr. Guy Johnson would be bringing an issue that the City of New Hope would like the TAC to discuss. Chair Loomis asked Administrator Nash to make sure the City of New Hope gets the issue on the TAC meeting agenda.

H. Education Committee Report. Commissioner Langsdorf reported that Commissioner Harper-Lore is heading up the Bassett Creek / BCWMC history project. Commissioner Harper-Lore reported that the Committee met with Deacon Warner and discussed his project and the Commission's project. She said that a history project subcommittee has been formed and will be co-chaired by herself and Commissioner Hoshal and also includes Commissioner Langsdorf, Alternate Commissioners Stockhaus and Thornton and Education Committee members Mary Karius and Margie Virgoren.

Commissioner Black reported that the Commission received an education grant application for the creation of a rain garden on private, residential property. The Commission discussed the issue of funding projects on private property and discussed the BCWMC's education grant criteria. Commissioner Black moved to deny the application for grant funding due. Commissioner Elder seconded the motion. <u>The motion carried with eight votes in favor and one vote against [City of Medicine Lake].</u> Alternate Commissioner Goddard asked if the Commission will change its criteria so that it is clear that these types of projects are not eligible for grant funding. Commissioner Black responded yes.

I. Merging the CIP and the TMDL Project Lists. Administrator Nash reported that there is a memo on the issue in the meeting packet and that the item should be deferred until after the TAC has a

chance to take it up.

J. Hennepin County's Consideration of Alternate Funding Methods for the CIP.
Administrator Nash reported that the Commission received a memo dated August 4th signed by Carl Michaud, Director of the Hennepin County Department of Environmental Services. He said that the issue is that some of the Hennepin County commissioners are sensitive to raising taxes for somebody else and asked County Staff to look at alternate funding mechanisms of Watershed Management Organizations. Administrator Nash said the memo describes some alternatives that could be investigated further. Administrator Nash explained that Joel Settles of Hennepin County would like feedback from the Commission. Mr. LeFevere commented that if the County is pushing restructuring and if the Commission is interested in restructuring, then now may be the time for the Commission to pursue the issue. Commissioner Elder stated that he would be willing to sit down with County Commissioner Opat to discuss the BCWMC with him.

Commissioner Black commented that she is open to a discussion of a potential change in structure and she would want the Commission to be part of that discussion. She suggested that the Commission communicate to the County that the BCWMC appreciates the memo and would be interested in talking further and would be willing to participate in a County-led forum of Watershed Management Organizations (WMOs) to discuss the issue. Commissioner Hoshal suggested that the BCWMC contact the Minnesota Association of Watershed Districts (MAWD) and the League of Minnesota Cities to see if they have positions on the issue. Commissioner Elder asked if the issue has to be handled right away or if the Commission could take action after the election season.

Chair Loomis recommended that the BCWMC respond to the County stating that the BCWMC appreciates the memo and would be willing to discuss the ideas further and would be willing to participate in a joint discussion with other WMOs. Mr. LeFevere stated that it would be nice for the Commission to have a one-page working paper on the issue for commissioners to use in communication with their city councils. Chair Loomis directed Administrator Nash to put together the working memo and the letter to the County.

7. Communications

A. Chair:
- **i. Chair Loomis reported that there was an article in the Pioneer Press recently about what Ramsey Conservation District is doing with a couple of lakes and that she would hand around copies.**

B. Administrator: Administrator Nash reviewed his Administrator's Report with the Commission

C. Commissioners:

- **i. Commissioner Black stated that Alternate Commissioner Hanson did not receive a response to his comments on the Sweeney Lake TMDL and would like a copy of how the comments were responded to. Chair Loomis said the Commission has authorized that the draft Sweeney Lake TMDL go to the MPCA and that the comments can be addressed during the public comment period. Commissioner Black requested that the Commission send a letter to Alternate Commissioner Hanson.**

- **ii. Commissioner Hoshal reported that he was appointed as the BCWMC Commissioner for Medicine Lake on August 2nd.**

iii. **Commissioner Langsdorf announced that the next Education Committee meeting will be held on September 10th at 9:00 a.m. at Plymouth City Hall and the next WMWA meeting will be held on September 14th at 8:30 a.m. in Plymouth City Hall.**

iv. **Commissioner Langsdorf stated that she will forward a brochure to Ms. Herbert about program for Environmental Education for Urban Youth through a grant received by Hennepin County Environmental Services. She said that a number of schools in the watershed would be able to take part and she will ask Ms. Herbert to forward the information on to the Commission.**

v. **Commissioner Langsdorf discussed the upcoming training program by the Freshwater Society and the Friends of the Minnesota Valley regarding organizing clean ups for water quality and said the Education Committee would consider adding next year as a project.**

vi. **Alternate Commissioner Thornton announced that Ginny Black was recently given an award by the National Environmental Hall of Fame.**

vii. **Alternate Commissioner Goddard reported on behalf of Commissioner Welch that a body had been found in the creek.**

D. **Committees: No communications**

E. **Counsel: No communications**

F. **Engineer:**

i. **Mr. Kremer reported that the Commission was sent a copy of BWSR's comments on the April 26, 2010, major plan amendment and that the comments were minor and that BWSR will be considering the amendment request in September.**

ii. **Mr. Kremer reported that the City of Minneapolis sent the BCWMC a request for comments on its comprehensive plan. He recommended that the Commission authorize its Administrator to send the Commission's standard letter to the City of Minneapolis. Chair Loomis moved to direct staff to send the letter. Alternate Commissioner Goddard seconded the motion. The motion carried unanimously with nine votes in favor.**

9. Adjournment

Chair Loomis adjourned the meeting at 2:50 p.m.

Linda Loomis, Chair	**Date**	**Amy Herbert, Recorder**	**Date**
Pauline Langsdorf, Secretary	**Date**		

4B.

Bassett Creek Watershed Management Commission General Account
General Fund (Administration) Financial Report
Fiscal Year: February 1, 2010 through January 31, 2011
MEETING DATE: September 23, 2010

CHECKING ACCOUNT 0100339

BEGINNING BALANCE	**12-Aug-10**			**552,788.44**
ADD:				
General Fund Revenue:				
	Interest		27.03	
	Donation:	Caroline's Kids Foundation	550.00	
	Permits:			
	RJ Ryan Const	Auer Steel-Plymouth	2,000.00	
	Wenck Assoc	Ply Creek Restoration	1,000.00	
	Park Nicollet	Struthert Parkinson Ctr	1,500.00	
	Ply Cov Church	Ply Covenant Church	3,000.00	
	Semper Dev	Walgreens-GV	1,500.00	
	Reimbursed Construction Costs		218,198.65	
		Total Revenue and Transfers In		**227,775.68**
DEDUCT:				
Checks:				
	2273 Barr Engineering	August Engineering Services	39,866.15	
	2274 D'Amico Catering	Sept Meeting	378.25	
	2275 Amy Herbert	August Secretarial	2,288.38	
	2276 Kennedy & Graven	July Legal	1,169.65	
	2277 Southdale Mini Print	Letterhead	233.97	
	2278 Watershed Consulting	August Administrator	3,000.00	
	2279 City of Plymouth	West Med Lake Pond Impro	199,081.71	
		Total Checks		246,018.11
Outstanding from previous month:				
	2272 Shingle Creek	Metro Bloom Partnership	2,000.00	
	2259 Pauline Langsdorf	Education supplies	55.56	
ENDING BALANCE	**14-Sep-10**			**534,546.01**

	2010/2011 BUDGET	CURRENT MONTH	YTD 2010/2011	BALANCE
OTHER GENERAL FUND REVENUE				
ASSESSEMENTS	414,150	0.00	414,150.00	0.00
PERMIT REVENUE	55,000	9,000.00	19,000.00	36,000.00
REVENUE TOTAL	469,150	9,000.00	433,150.00	36,000.00
EXPENDITURES				
ENGINEERING				
ADMINISTRATION	110,000	7,282.50	69,244.85	40,755.15
PLAT REVIEW	60,000	3,796.50	35,857.50	24,142.50
COMMISSION MEETINGS	13,000	960.00	7,570.00	5,430.00
SURVEYS & STUDIES	20,000	4,255.24	17,123.00	2,877.00
WATER QUALITY/MONITORING	20,000	2,765.75	8,445.25	11,554.75
WATER QUANTITY	11,000	591.50	5,176.00	5,824.00
WATERSHED INSPECTIONS	8,000	816.00	5,108.00	2,892.00
ANNUAL FLOOD CONTROL INSPECTIONS	10,000	0.00	5,713.50	4,286.50
REVIEW MUNICIPAL PLANS	4,000	0.00	7,787.00	(3,787.00)
ENGINEERING TOTAL	256,000	20,467.49	162,025.10	93,974.90
ADMINISTRATOR	15,000	3,233.97	13,637.17	1,362.83
LEGAL COSTS	18,500	1,169.65	10,240.86	8,259.14
AUDIT, INSURANCE & BONDING	15,000	0.00	13,407.00	1,593.00
FINANCIAL MANAGEMENT	3,000	0.00	53.55	2,946.45
MEETING EXPENSES	5,000	378.25	2,846.33	2,153.67
SECRETARIAL SERVICES	45,000	2,555.85	24,588.73	20,411.27
PUBLICATIONS/ANNUAL REPORT	4,000	0.00	5,168.50	(1,168.50)
WEBSITE	4,500	14.25	256.50	4,243.50
PUBLIC COMMUNICATIONS	3,000	0.00	0.00	3,000.00
WOMP	10,000	0.00	4,046.50	5,953.50
DEMONSTRATION/EDUCATION GRANTS	5,000	0.00	180.00	4,820.00
EDUCATION AND PUBLIC OUTREACH	4,000	0.00	-605.06	4,605.06
WATERSHED EDUCATION PARTNERSHIPS	15,000	0.00	9,000.00	6,000.00
EROSION/SEDIMENT (CHANNEL MAINT)	25,000	0.00	0.00	25,000.00
LONG TERM MAINTENANCE (moved to CF)	25,000	0.00	0.00	25,000.00
TMDL STUDIES (moved to CF)	10,000	0.00	0.00	10,000.00
GRAND TOTAL	463,000	27,819.46	244,845.18	218,154.82

BCWMC Construction Account (802-1119576)
Fiscal Year: February 1, 2010 through January 31, 2011
September 2010 Financial Report

Beginning Balance	**12-Aug-10**		**$2,971,562.95**
ADD:			
	Interest	145.33	
			145.33
DEDUCT:			
	Investment -Dain	508,918.39	
	Construction Costs	218,198.65	
			727,117.04
Ending Balance:	**14-Sep-10**		**$2,244,591.24**

Investments	
Federal Home Loan Mtg Corp - Purchased 7/22/09 - Due 10/18/2010 - 0.55% (Current mkt value $503,026.50)	$533,957.50
Federal Home Loan Mtg Corp - Purchased 8/12/10 - Due 5/13/2015 - 0.45% (Current mkt value $504,690.00)	508,918.39
Total Investments	**1,042,875.89**
Construction Account - Cash Balance (detailed above)	2,244,591.24
Total: Construction Fund Cash/Investments	**3,287,467.13**
Less: Reserved for CIP Projects	2,494,493.23
Construction Cash/Investments Available for projects	**$792,973.90**

BCWMC Second Generation Projects	**Budget**	**Current**	**YTD**	**Project Total**	**Balance**
Approved CIP Projects:					
2006 Parkers Lake Water Quality Project	42,000	0.00	0.00	3,434.24	38,565.76
Twin Lake-expected completion 2006	140,000	0.00	0.00	5,724.35	134,275.65
Westwood Lake - will closed in 2010	312,000	0.00	0.00	225,864.90	86,135.10
Proposed CIP Projects:					
Lakeview Park Pond-expected completion 2007		0.00	0.00	637.50	(637.50)
West Medicine Lake Park Pond	1,100,000	199,081.71	700,767.45	723,471.51	376,528.49
Budget increase Resolution 08-07 (200,000)					
Northwood Lake East Pond	107,250	0.00	0.00	71,831.27	35,418.73
Twins Stadium	0	0.00	38.20	17,363.42	(17,363.42)
Ramada Pond (Crane Lake)	90,000	0.00	0.00	39.00	89,961.00
Plymouth Creek Restoration	550,000	2,820.00	5,593.50	33,931.70	516,068.30
Bassett Creek Feasibility Study	0	0.00	544.35	12,113.40	(12,113.40)
Plymouth Creek Feasibility	0	0.00	0.00	1,936.00	(1,936.00)
Crystal-Regent Avenue (2010 CR)	0	1,686.50	3,839.00	3,839.00	(3,839.00)
Wisc Ave/Duluth Street-Crystal	0	6,791.44	27,755.82	27,755.82	(27,755.82)
North Branch (2011 CR-NB)	0	4,136.00	25,217.51	25,217.51	(25,217.51)
Plymouth Pond-07(NL-2)	0	0.00	602.00	602.00	(602.00)
Resource Management Plan	0	0.00	1,533.00	57,094.21	(57,094.21)
TMDL Projects					
TMDL Studies	125,000	1,385.00	14,775.25	102,358.15	22,641.85
Sweeney Lake TMDL	119,000	2,298.00	14,519.00	195,531.36	(76,531.36)
Annual Flood Control Projects:					
Flood Control Emergency Maintenance	500,000	0.00	0.00	0.00	500,000.00
Flood Control Long-Term Maintenance	773,373	0.00	0.00	13,566.33	759,806.67
Annual Water Quality					
Channel Maintenance Fund	200,000	0.00	0.00	41,818.10	158,181.90
	4,058,623	**218,198.65**	**795,185.08**	**1,564,129.77**	**2,494,493.23**
Project Reimbursements					
Twins Stadium		0.00	6,564.20	26,959.64	
Sweeney Lake TMDL		0.00	0.00	154,123.94	

Tax Levy Revenues

	County Levy	Abatements / Adjustments	Adjusted Levy	Current Received	Year to Date Received	Inception to Date Received	Balance	BCWMO Levy
2010 Tax Levy	935,000.00		935,000.00		448,229.46	448,229.46	486,770.54	935,000
2009 Tax Levy	800,000.00	(1,254.26)	798,745.74		2,533.07	791,253.35	7,492.39	800,000
2008 Tax Levy	908,128.08	(850.59)	907,277.49		752.41	902,236.02	5,041.47	907,250
2007 Tax Levy	190,601.74	(200.27)	190,401.47		76.46	189,870.93	530.54	190,000
2006 Tax Levy	531,095.47	(1,134.64)	529,960.83		83.26	528,729.95	1,230.88	519,000
2005 Tax Levy	450,401.40	(1,429.91)	448,971.49		(3.41)	448,701.37	270.12	438,000
							501,335.94	

Basset Creek Construction Project Details

	Parkers Lake Water Quality (Circle Pond)	Twin Lake	Westwood Lake	Flood Control Emergency Maintenance	Flood Control Long-Term Maintenance	Channel Maintenance	West Medicine Lake Park Pond	Lakeview Park Pond	Northwood Lake East Pond	Crane Lake - Ramada Inn Pond	Plymouth Creek Channel Restoration	Plymouth Creek Feasibility	Bassett Creek Feasibility	Twins Stadium	Crystal - Regent Ave	Wisc Ave (Duluth Str)-Crystal	North Branch	Plymouth Pond NB-07 (NL-2)	Resource Mgmt Plan	TMDL Studies	Sweeney Lake TMDL
Original Budget	**42,000.00**	**140,000.00**	**312,000.00**	**500,000.00**	**773,373.00**	**200,000.00**	**1,100,000.00**	**0.00**	**107,250.00**	**90,000.00**	**550,000.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**125,000.00**	**119,000.00**
Expenditures:																					
Feb 2004 - Jan 2005	0.00	1,983.50	0.00	0.00	0.00	0.00	0.00	637.50	0.00	0.00	0.00		0.00	0.00						0.00	0.00
Feb 2005 - Jan 2006	983.75	1,716.70	11,724.12	0.00	3,954.44	2,994.75	0.00	0.00	0.00	0.00	0.00		0.00	0.00						0.00	0.00
Feb 2006 - Jan 2007	150.00	375.70	162,645.36	0.00	9,611.89	0.00	1,789.25	0.00	0.00	0.00	0.00		0.00	156.75						637.20	0.00
Feb 2007 - Jan 2008	0.00	36.00	0.00	0.00	0.00	0.00	1,835.70	0.00	858.45	0.00	0.00		0.00	13,312.47						23,486.95	89,654.49
Feb 2008 - Jan 2009	0.00	0.00	0.00	0.00	0.00	38,823.35	19,392.11	0.00	60,218.68	39.00	20,954.25		0.00	0.00					6,809.50	31,590.12	47,041.86
Feb 2009 - Jan 2010	2,300.49	1,612.45	51,495.42	0.00	0.00	0.00	687.00	0.00	10,754.14	0.00	7,383.95	1,936.00	11,569.05	3,856.00					48,751.71	31,868.63	44,316.01
Feb 2010 - Jan 2011	0.00	0.00	0.00	0.00	0.00	0.00	700,767.45	0.00	0.00	0.00	5,593.50	0.00	544.35	38.20	3,839.00	27,755.82	25,217.51	602.00	1,533.00	14,775.25	14,519.00
Total Expenditures:	**3,434.24**	**5,724.35**	**225,864.90**	**0.00**	**13,566.33**	**41,818.10**	**723,471.51**	**637.50**	**71,831.27**	**39.00**	**33,931.70**	**1,936.00**	**12,113.40**	**17,363.42**	**3,839.00**	**27,755.82**	**25,217.51**	**602.00**	**57,094.21**	**102,358.15**	**195,531.36**
Project Balance	**38,565.76**	**134,275.65**	**86,135.10**	**500,000.00**	**759,806.67**	**158,181.90**	**376,528.49**	**(637.50)**	**35,418.73**	**89,961.00**	**516,068.30**	**(1,936.00)**	**(12,113.40)**	**(17,363.42)**	**(3,839.00)**	**(27,755.82)**	**(25,217.51)**	**(602.00)**	**(57,094.21)**	**22,641.85**	**(76,531.36)**

	Parkers Lake Water Quality (Circle Pond)	Twin Lake	Westwood Lake	Flood Control Emergency Maintenance	Flood Control Long-Term Maintenance	Channel Maintenance	West Medicine Lake Park Pond	Lakeview Park Pond	Northwood Lake East Pond	Crane Lake - Ramada Inn Pond	Plymouth Creek Channel Restoration	Plymouth Creek Feasibility	Bassett Creek Feasibility	Twins Stadium	Crystal - Regent Ave	Wisc Ave (Duluth Str)-Crystal	North Branch	Plymouth Pond NB-07 (NL-2)	Resource Mgmt Plan	TMDL Studies	Sweeney Lake TMDL
Project Totals By Vendor																					
Barr Engineering	2,819.94	3,758.10	11,320.87	0.00	9,549.32	0.00	6,486.91	592.50	0.00	39.00	33,282.30	1,936.00	10,604.50	12,064.49	3,839.00	27,755.82	25,217.51	602.00	57,094.21	99,481.70	79,479.17
Kennedy & Graven	614.30	1,966.25	503.25	0.00	24.75	354.75	1,427.15	45.00	858.45	0.00	649.40	0.00	1,508.90	5,298.93	0.00	0.00	0.00	0.00	0.00	1,164.30	2,902.59
City of Golden Valley	0.00	0.00	0.00	0.00	0.00	2,640.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City of New Hope	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70,972.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City of Plymouth	0.00	0.00	0.00	0.00	0.00	0.00	715,557.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City of St. Louis Park	0.00	0.00	214,040.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Com of Trans	0.00	0.00	0.00	0.00	3,992.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City of Minneapolis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S E H	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100,375.60
Misc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,712.15	12,774.00
Total Expenditures	**3,434.24**	**5,724.35**	**225,864.90**	**0.00**	**13,566.33**	**2,994.75**	**723,471.51**	**637.50**	**71,831.27**	**39.00**	**33,931.70**	**1,936.00**	**12,113.40**	**17,363.42**	**3,839.00**	**27,755.82**	**25,217.51**	**602.00**	**57,094.21**	**102,358.15**	**195,531.36**

Item 4C

Amy Herbert · Virtual Administrator Services

733 Preakness Lane, Chanhassen, MN 55317
bcra@barr.com · 952-832-2652

September 2, 2010

Bassett Creek Watershed Management Commission (BCWMC)
Attn: Sue Virnig, Deputy Treasurer
7800 Golden Valley Road
Golden Valley, MN 55427

For contracted services August 1, 2010 through August 31, 2010

Administrative Services to BCWMC

- Assisted in the creation of the August 19th BCWMC meeting agenda; organized packet materials for copying, copied, and assembled meeting packets, delivered meeting packets to Barr Engineering mail room for Barr to weigh, add postage, and mail; posted meeting packet on BCWMC's Web site and e-mailed link to Commission; e-mailed agenda to agenda list and e-mailed approved meeting minutes to distribution list.

- Maintained BCWMC files; Communicated with BCWMC attorney, engineers, Administrator, Deputy Treasurer, Chair, commissioners, and committee members; Coordinated with Commission Engineer on distribution of tasks assigned at BCWMC meeting and on the draft public hearing notices.

- Organized BCWMC monthly invoices; Distributed invoice payments; Followed up with Deputy Treasurer and counsel regarding LMCIT invoice and payment

- Forwarded Comprehensive Plan response letter to Geoff Nash; Forwarded copy of revised pages in *Watershed Management Plan* to Brad Wozney per request; Drafted and sent letter and public notice of August and September BCWMC public hearings to member cities, necessary agencies, and the Commission; Created and coordinated publication of September 23rd public hearing notice.

34.00 hours @ $57.00 per hour $1,938.00

BCWMC Meetings
Coordinated and attended August 17th conference call with Chair Loomis, Karen Chandler, Len Kremer, and Geoff Nash; Set up and attended August 19th BCWMC meeting (coordinated room reservation; ordered and received catering; coordinated agenda, prepared and provided handouts not provided in meeting packet; recorded meeting)

5.75 hours @ $57.00 per hour $327.75

Web Site Services to BCWMC
Updated meeting minute archive

0.25 hours @ $57.00 per hour $14.25

Expenses
No August expenses..... $0.00

Mileage
Mileage from Chanhassen to Golden Valley City Hall for August 17th BCWMC meeting (16.76 miles x 0.50 = $8.38) $8.38

Subtotal Administrative Services	$2,274.13
Subtotal Web Site Services	$14.25
Total Current Billing:	**$2,288.38**

I declare, under penalty of law, that this account, claim or demand is just and correct and that no part of it has been paid.

Signature of Claimant

Bassett Creek WMO
7800 Golden Valley Road
Golden Valley, MN 55427

Page # 1
Invoice # 23270051-2010-7
Project # 23/27-0051
Client # 59
September 10, 2010

Invoice of Account with
BARR ENGINEERING COMPANY

For professional services during the period of
July 31, 2010 through August 27, 2010

ENGINEERING

TECHNICAL SERVICES

Calls/emails to or from the Commissioners, administrator, watershed communities, developers in the watershed, Minneapolis Park and Recreation Board (MPRB), Three Rivers Park District (TRPD), Mississippi Watershed Management Organization, Minnesota Department of Transportation (Mn/DOT), Hennepin County, Minnesota Board of Water and Soil Resources (BWSR), Metropolitan Council Environmental Services (MCES), Minnesota Pollution Control Agency (MPCA), Corps of Engineers and interested citizens; coordination with Administrator regarding post-meeting tasks; assistance with major plan amendment, final letter and attachments; provided BCWMC Plan excerpt to Administrator; prepared list of structures that BCWMC has maintenance responsibility; telephone call from City of Minnetonka staff regarding stream restoration projects.

Leonard J. Kremer, Principal Engineer/Scientist		
13.0 hours @ $160.00 per hour	$	2,080.00
Karen L. Chandler, Senior Consultant		
1.8 hours @ $140.00 per hour	$	252.00
Technicians/Administrative	$	524.50
Subtotal, Technical Services	$	2,856.50

PRELIMINARY SITE REVIEW/CORRESPONDENCE

Telephone conversations regarding proposed developments; provided watershed hydraulic information, flood profiles and BCWMC development requirements to applicants; preliminary correspondence with applicant, city and Plowe Engineering regarding Plymouth Covenant Church; preliminary correspondence with City of Golden Valley staff regarding Parkinson Center parking improvements; coordination and telephone conversation with consultant regarding CP rail bridge at Bassett Creek Park in Minneapolis; reviewed preliminary drawings and prepared email regarding BCWMC requirements; attended meeting with developer and MFRA regarding proposed Plymouth development; telephone conversation with city staff regarding proposed Golden Valley projects; communication with Bonestroo regarding proposed Plymouth pump station and BCWMC requirements.

Leonard J. Kremer, Principal Engineer/Scientist		
2.0 hours @ $160.00 per hour	$	320.00

James P. Herbert, Principal Engineer/Scientist
5.4 hours @ $140.00 per hour ..... $ 756.00

Subtotal, Preliminary Site/Corr ..... $ 1,076.00

MONTHLY MEETING PREPARATION

Preparation of monthly memorandum for BCWMC meeting; reviewed draft BCWMC meeting minutes, agenda and packet materials and discussed comments with Bassett Creek Administrator and Recording Administrator; conference call with BCWMC Chair and staff regarding meeting agenda; preparation of list of non-operating budget projects to BCWMC; communications with Bassett Creek Administrator and Recording Administrator; internal meetings regarding agenda, to-do list and meeting packet and August 19, 2010 meeting; prepared permit figures; reviewed Hennepin County letter regarding funding; coordination regarding Sweeney Lake and Medicine Lake outlet and preparation of memo.

Leonard J. Kremer, Principal Engineer/Scientist
2.5 hours @ $160.00 per hour ..... $ 400.00
James P. Herbert, Principal Engineer/Scientist
11.1 hours @ $140.00 per hour ..... $ 1,554.00
Karen L. Chandler, Senior Consultant
8.7 hours @ $140.00 per hour ..... $ 1,218.00

Technicians/Administrative ..... $ 150.00

Subtotal, Monthly Memorandums ..... $ 3,322.00

TAC MEETING PREPARATION

Preparation for September, 2010 TAC meeting.

Karen L. Chandler, Senior Consultant
0.2 hours @ $140.00 per hour ..... $ 28.00

Subtotal, TAC Meeting Preparation ..... $ 28.00

Subtotal Technical Services ..... $ 7,282.50

PLAT REVIEW Note: Projects in **Bold** have provided review fees to offset review costs. Projects not in Bold are either in a preliminary stage or were submitted prior to implementation of the fee schedule.

Co. Rd. 9 & 61 Erosion Repair

Erosion control inspection.

Technicians/Administrative ..... $ 64.00

Subtotal, Co. Rd. 9 & 61 Erosion Repair ..... $ 64.00

Crown Packaging

Erosion control inspection.

Technicians/Administrative	$	40.00
Subtotal, Crown Packaging	$	40.00

Hennepin Co. Regional Trail – Phase 2

Erosion control inspection.

Technicians/Administrative	$	64.00
Subtotal, Hen Co Regional Trail – Ph 2	$	64.00

Beacon Academy

Erosion control inspection.

Technicians/Administrative	$	40.00
Subtotal, Beacon Academy	$	40.00

Plymouth Creek Ponds

Erosion control inspection.

Technicians/Administrative	$	72.00
Subtotal, Plymouth Creek Ponds	$	72.00

2009 Mtka St Rehab-Sherwood Forest Neighborhood

Erosion control inspection.

Technicians/Administrative	$	64.00
Subtotal, 2009 Mtka St Rehab-Sherwood Forest Neighborhood	$	64.00

26th Ave/Plymouth Creek Culvert Replacement

Erosion control inspection.

Technicians/Administrative	$	64.00
Subtotal, 26th Ave/Plymouth Creek Culvert Replacement	$	64.00

Laurel Hills Condo

Erosion control inspection.

Technicians/Administrative	$	64.00
Subtotal, Laurel Hills Condo	$	64.00

SP 2772-81 (TH 169 Medicine Lk Rd Ramp)

Erosion control inspection.

Technicians/Administrative	$	64.00
Subtotal, SP 2772-81 (TH 169 Medicine Lk Rd Ramp)	$	64.00

South Shore Drive Bridge Reconstruction & South Shore Drive Mill & Overlay

Communications with applicant and City staff; reviewed revised grading, drainage and erosion control plans; prepared letter of approval to the City of Plymouth.

James P. Herbert, Principal Engineer/Scientist		
1.0 hours @ $140.00 per hour	$	140.00
Rita A. Weaver, Senior Engineer/Scientist		
0.8 hours @ $95.00 per hour	$	76.00
Technicians/Administrative	$	168.00
Subtotal, So Shore Dr Reconstruction/Bridge	$	384.00

Golden Valley 2010 Pavement Mgmt Proj

Erosion control inspection.

Technicians/Administrative	$	112.00
Subtotal, GV 2010 Pavement Mgmt Proj	$	112.00

Wirth Park Pedestrian Bridge

Erosion control inspection.

Technicians/Administrative	$	72.00
Subtotal, Wirth Park Pedestrian Bridge	$	72.00

Hilde Performance Center

Erosion control inspection.

Technicians/Administrative	$	72.00
Subtotal, Hilde Performance Center	$	72.00

So Shore Dr Emergency Utility Repair

Telephone conversations with applicant and City staff; review and revised project drawings; prepared letter of approval to the City of Plymouth and Metropolitan Council; coordination with DNR staff regarding DNR permit.

James P. Herbert, Principal Engineer/Scientist
1.1 hours @ $140.00 per hour ..... $ 154.00

Subtotal, So Shore Dr Emer Utility Repair..... $ 154.00

Struthers Parkinson Ctr Parking Improvements

Communications with applicant and City staff; reviewed revised grading, drainage and erosion control plans; prepared letter of approval to the City of Golden Valley.

James P. Herbert, Principal Engineer/Scientist
3.0 hours @ $140.00 per hour ..... $ 420.00
Rita A. Weaver, Senior Engineer/Scientist
5.4 hours @ $95.00 per hour ..... $ 513.00

Subtotal, Struthers Parkinson Ctr Parking Improvements ..... $ 933.50

Plymouth Covenant Church Parking Improvements

Communications with applicant and City staff; reviewed historical drawings and BMP plans; reviewed revised grading, drainage and erosion control plans; prepared letter of approval to the City of Plymouth.

James P. Herbert, Principal Engineer/Scientist
5.3 hours @ $140.00 per hour ..... $ 742.00
Rita A. Weaver, Senior Engineer/Scientist
5.8 hours @ $95.00 per hour ..... $ 551.00

Subtotal, Plymouth Covenant Church Parking Improvements..... $ 1,293.00

Walgreens Construction

Communications with applicant and City staff; preliminary review of grading, drainage and erosion control plans for project in the City of Golden Valley.

James P. Herbert, Principal Engineer/Scientist
0.7 hours @ $140.00 per hour ..... $ 98.00
Rita A. Weaver, Senior Engineer/Scientist
1.5 hours @ $95.00 per hour ..... $ 142.50

Subtotal, Walgreens Construction..... $ 240.50

Subtotal Plat Review ..... $ 3,796.50

COMMISSION MEETINGS

Attended August 19, 2010 Commission meeting.

Leonard J. Kremer, Principal Engineer/Scientist	
6.0 hours @ $160.00 per hour	$ 960.00
Subtotal, Commission Meetings	$ 960.00

SURVEYS AND STUDIES

Communications and preparation of memorandum to the BCWMC regarding Sweeney Lake Outlet; preparation of memorandum to the BCWMC regarding the Medicine Lake Outlet and City of Medicine Lake public meeting; reviewed sediment volume and area calculations, prepared sediment location map, prepared bathymetric data for Twin Lakes sediment sampling, performed Twin Lake sediment phosphorus analyses; preliminary preparation of Twin Lake Sediment Sampling report.

Leonard J. Kremer, Principal Engineer/Scientist	
12.5 hours @ $160.00 per hour	$ 2,000.00
Margaret R. Rattei, Senior Consultant	
9.1 hours @ $115.00 per hour	$ 1,046.50
Rita A. Weaver, Senior Engineer/Scientist	
1.8 hours @ $95.00 per hour	$ 171.00
Brian J. Huser, Senior Engineer/Scientist	
4.5 hours @ $110.00 per hour	$ 495.00
Kevin D. Menken, Senior Engineer/Scientist	
1.0 hours @ $95.00 per hour	$ 95.00
Aaron D. Mielke, Engineer/Scientist	
4.0 hours @ $85.00 per hour	$ 340.00
Expenses (Iron Mountain)	$ 107.74
Subtotal, Surveys and Studies	$ 4,255.24

WATER QUALITY MONITORING

Communications with Three Rivers Park District (TRPD) staff regarding Medicine Lake monitoring; reviewed historical lake graphs performed Medicine Lake macrophyte (plant) mapping; performed Medicine Lake zooplankton analyses; prepared bacteria memorandum.

Margaret R. Rattei, Senior Consultant	
11.6 hours @ $115.00 per hour	$ 1,334.00
Michael B. Strong, Engineer/Scientist	
4.0 hours @ $70.00 per hour	$ 280.00
Technicians/Administrative	$ 1,088.00
Expenses (2WD vehicle/mileage/outboard motor)	$ 63.75
Subtotal, Water Quality Monitoring	$ 2,765.75

WATER QUANTITY

Measured and reviewed lake level elevations as part of the lake-gauging program; reviewed historical data and measured August high water events.

Technicians/Administrative	$	544.00
Expenses (Mileage/field vehicle)	$	47.50
Subtotal, Water Quantity	$	591.50

WATERSHED INSPECTION

Performed erosion control inspections of construction sites; prepared letter regarding inspections and improvements required for effective erosion control; communication with Plymouth staff regarding inspections.

James P. Herbert, Principal Engineer/Scientist 1.5 hours @ $140.00 per hour	$	210.00
Technicians/Administrative	$	456.00
Expenses (Equipment/mileage)	$	150.00
Subtotal, Watershed Inspection	$	816.00

TOTAL ENGINEERING ..... $ 20,467.49

SECRETARIAL SERVICES

SECRETARIAL SERVICES EXPENSES

Administrative expenses requested by Amy Herbert including: copies, color copies for meeting packet; postage, CD duplication, video digital capture/conversion and BCWMC meeting catering; packet assembly; report assembly.

Expenses (B&W/color copies/postage)	$	281.72
Catering (BCWMC meeting date)	$	-0-
TOTAL SECRETARIAL SERVICES EXPENSES	**$**	**281.72**

WATERSHED OUTLET MONITORING PROGRAM (WOMP)

TOTAL WOMP ..... $ 0.00

CAPITAL IMPROVEMENT PROJECTS

PLYMOUTH CREEK RESTORATION PROJ (2010 CR)

Coordination with City of Plymouth; requested flow monitoring data from Three Rivers Park District; reviewed Plymouth Creek restoration plan; prepared preliminary memorandum for BCWMC; prepared letter of recommendation to City of Plymouth and DNR.

James P. Herbert, Principal Engineer/Scientist		
6.4 hours @ $140.00 per hour	$	896.00
Leonard J. Kremer, Principal Engineer/Scientist		
2.5 hours @ $160.00 per hour	$	400.00
Gregory J. Wilson, Senior Consultant		
2.0 hours @ $140.00 per hour	$	280.00
Jeffrey D. Weiss, Senior Engineer/Scientist		
12.7 hours @ $95.00 per hour	$	1,206.50
Technicians/Administrative	$	37.50
Subtotal, Plymouth Creek Restoration Project	$	2,820.00

CRYSTAL-REGENT AVENUE (2010 CR)

Reviewed preliminary drawings; attended meeting with City of Golden Valley staff and WSB; prepared stage-storage curve for outlet structure.

Leonard J. Kremer, Principal Engineer/Scientist		
3.0 hours @ $160.00 per hour	$	480.00
Jeffrey D. Weiss, Senior Engineer/Scientist		
12.7 hours @ $95.00 per hour	$	1,206.50
Subtotal, Crystal-Regent Avenue	$	1,686.50

BASSETT CREEK: WISCONSIN AVENUE – CRYSTAL (2011 CR)

Coordination with BWSR staff regarding major plan amendment; reviewed BWSR comments and contacted BWSR staff regarding responses; communication with BWSR staff regarding scoring for local match as part of BWSR Clean Water Fund grants; reviewed Recording Secretary's draft hearing notice and letter; communications with Administrator regarding BCWMC maintenance policies for stream projects and regarding long-term maintenance of channel restoration projects; prepared for and presented feasibility study to BCWMC; attended meeting with City of Golden Valley staff regarding drawings; coordination with Administrator regarding public hearing and BWSR grant; reviewed cost estimate and needed/likely ad valorem request.

James P. Herbert, Principal Engineer/Scientist		
1.0 hours @ $140.00 per hour	$	140.00
Leonard J. Kremer, Principal Engineer/Scientist		
2.5 hours @ $160.00 per hour	$	400.00
Karen L. Chandler, Senior Consultant		
5.8 hours @ $140.00 per hour	$	812.00

Jeffrey T. Lee, Senior Consultant
2.1 hours @ $130.00 per hour ..... $ 273.00
Jeffrey D. Weiss, Senior Engineer/Scientist
7.0 hours @ $95.00 per hour ..... $ 665.00

Subtotal, Bassett Crk: Wisconsin Ave– Crystal (2011 CR) ..... $ 2,290.00

FEASIBILITY STUDY: BASSETT CREEK (2011CR)

Performed feasibility study tasks including mapping for report and GPS photograph coordination; preparation of topographic maps; performed field wetland delineation and prepared delineation report; prepared draft feasibility study report and distributed to BCWMC.

Leonard J. Kremer, Principal Engineer/Scientist
1.2 hours @ $160.00 per hour ..... $ 192.00
Karen L. Chandler, Senior Consultant
1.4 hours @ $140.00 per hour ..... $ 196.00
Genesis M. Humphrey, Senior Engineer/Scientist
4.0 hours @ $90.00 per hour ..... $ 360.00
Jeffrey D. Weiss, Senior Engineer/Scientist
16.0 hours @ $95.00 per hour ..... $ 1,520.00
Karen S. Wold, Senior Engineer/Scientist
0.5 hours @ $95.00 per hour ..... $ 47.50

Technicians/Administrative ..... $ 302.00

Expenses (mileage/GPS system/digital camera/copies/binding) ..... $ 1,883.94

Subtotal, Feasibility Study: Bassett Creek (2011CR) ..... $ 4,501.44

NORTH BRANCH (2011CR-NB)

Coordination with BWSR staff regarding major plan amendment; reviewed BWSR comments and contacted BWSR staff regarding responses; communication with BWSR staff regarding scoring for local match as part of BWSR Clean Water Fund grants; reviewed Recording Secretary's draft hearing notice and letter; communications with Administrator regarding BCWMC maintenance policies for stream projects and regarding long-term maintenance of channel restoration projects; prepared for and presented feasibility study to BCWMC; coordination with Administrator regarding public hearing and BWSR grant; reviewed cost estimate and needed/likely ad valorem request;

Karen L. Chandler, Senior Consultant
5.8 hours @ $140.00 per hour ..... $ 812.00
Jeffrey T. Lee, Senior Consultant
1.6 hours @ $130.00 per hour ..... $ 208.00
Jeffrey D. Weiss, Senior Engineer/Scientist
7.0 hours @ $95.00 per hour ..... $ 665.00

Subtotal, North Branch (2011CR-NB) ..... $ 1,685.00

FEASIBILITY STUDY: NO BRANCH (2011CR-NB)

Performed feasibility study tasks including mapping for report and GPS photograph coordination; preparation of topographic maps; performed field wetland delineation and prepared delineation report; prepared draft feasibility study report and distributed to BCWMC.

Leonard J. Kremer, Principal Engineer/Scientist	
1.5 hours @ $160.00 per hour	$ 240.00
Karen L. Chandler, Senior Consultant	
1.5 hours @ $140.00 per hour	$ 210.00
Jeffrey D. Weiss, Senior Engineer/Scientist	
16.0 hours @ $95.00 per hour	$ 1,520.00
Genesis M. Humphrey, Senior Engineer/Scientist	
4.0 hours @ $90.00 per hour	$ 360.00
Karen S. Wold, Senior Engineer/Scientist	
0.5 hours @ $95.00 per hour	$ 47.50
Technicians/Administrative	$ 17.00
Expenses (mileage/GPS system/digital camera)	$ 56.50
Subtotal, Feasibility Study: No Branch (2011CR-NB)	$ 2,451.00

TOTAL CAPITAL IMPROVEMENT PROJECTS ..... $ 15,433.94

TMDL STUDIES

SWEENEY LAKE TMDL

Call from Administrator regarding response to citizen comments on TMDL; development of a map regarding potential BMP placement and evaluations for implementation of the Sweeney Lake TMDL.

Leonard J. Kremer, Principal Engineer/Scientist	
6.2 hours @ $160.00 per hour	$ 992.00
Karen L. Chandler, Senior Consultant	
0.4 hours @ $140.00 per hour	$ 56.00
Keith M. Pilgrim, Senior Consultant	
10.0 hours @ $125.00 per hour	$ 1,250.00
Subtotal, Sweeney Lake TMDL	$ 2,298.00

WIRTH LAKE TMDL

Coordination regarding Wirth Lake TMDL; reviewed implementation plan requirements/timeline; reviewed cost estimate for gate as part of implementation plan.

James P. Herbert, Principal Engineer/Scientist	
0.5 hours @ $140.00 per hour	$ 70.00

Gregory J. Wilson, Senior Consultant
0.8 hours @ $140.00 per hour ..... $ 112.00

Technicians/Administrative ..... $ 75.00

Subtotal, Wirth Lake TMDL ..... $ 257.00

E-COLI SAMPLING

Coordination with MPCA; prepared memorandum to BCWMC.

Margaret R. Rattei, Senior Consultant
6.2 hours @ $115.00 per hour ..... $ 713.00
Amy E. Krueger, Communications Specialist
1.9 hours @ $100.00 per hour ..... $ 190.00

Technicians/Administrative ..... $ 225.00

Subtotal, E-Coli Sampling ..... $ 1,128.00

TOTAL TMDL STUDIES ..... $ 3,683.00

SUMMARY TOTALS

Total Engineering	**$ 20,467.49**
Total Secretarial Services Expenses	**$ 281.72**
Total WOMP	**$ 0.00**
Total Capital Improvement Projects	**$ 15,433.94**
Total TMDL Studies	**$ 3,683.00**
TOTAL PAYABLE	**$ 39,866.15**

Barr declares under the penalties of law that this account, claim or demand is just and that no part of it has been paid.

Leonard J. Kremer

ACE Drop-Off Catering

Invoice

VB Box 132
PO Box 9202
Minneapolis, MN 55480-9202
612/238-4016 ahoffer@damico.com

INVOICE #
46968

BILL TO
Barr Engineering Amy Herbert 4700 W 77th Street Edina, MN 55435-4803

SHIP TO
Golden Valley City Hall-2nd Fl-Council Rm 7800 Golden Valley Road Site Contact: Judy N 763/593-3991 PO#23270512008300 952/832-2652 fax: 832-2601

P.O. NUMBER	TERMS		DELIVERY DATE	DAY	PPL	DELIVERY TIME
see above	Due on receipt		9/23/2010	Thursday	22	10:45 AM (10:30-11)

QUATY	DESCRIPTION	PRICE EA...	AMOUNT
22	Hot Monthly Special Buffet	11.95	262.90T
1	Jumbo Stuffed Pasta Shells with Ricotta and Spinach in a Red Sauce (Vegetarian) - In TO Go Box	3.00	3.00T
21	Sauteed Chicken Breast with Gremolada Sauce (Light Cream Sauce with Zest of Lemon, Lime, Orange and Garlic)	0.00	0.00T
22	Fingerling Potatoes with Broad Beans	0.00	0.00T
22	Herb Green Beans	0.00	0.00T
22	House Salad with French and Ranch Dressing	0.00	0.00T
22	Artesian Breads, Rolls & Butter	0.00	0.00T
22	Assorted Bars & Cookies	0.00	0.00T
1	DOZEN Assorted Bars & Cookies - Mark for BREAK and Set Aside	18.00	18.00T
2	Full Disposable Chafer-PU Old ones if can.	0.00	0.00T
10	Assorted Sodas- 2 Coke, 4 Diet Coke, 2 Sprite & 2 Mineral Water	1.25	12.50T
22	Spring Water	1.25	27.50T
6	Lemonade	1.45	8.70T
	Subtotal		332.60
	Delivery Charge	20.00	20.00T
	Metro Sales Tax	7.275%	25.65

Holiday Menus Available, Reserve a Date!

Total $378.25

Please note NEW PO BOX as of July 2009
Please make checks payable to "D'Amico Catering".
Reference the invoice # and delivery date on your check, unless paid by credit card.
Thank you for your business.

Agreed to by (customer)_____

Kennedy & Graven, Chartered

200 South Sixth Street
Suite 470
Minneapolis, MN 55402

(612) 337-9300
Tax ID No. 41-1225694

August 26, 2010

Statement No. 97665

Bassett Creek Water Management Commission
Sue Virnig

7800 Golden Valley Road
Golden Valley, MN 55427

Through July 31, 2010

BA295-00001 General	1,169.65
Total Current Billing:	**1,169.65**

I declare, under penalty of law, that this account, claim or demand is just and correct and that no part of it has been paid.

Signature of Claimant

Kennedy & Graven, Chartered

200 South Sixth Street
Suite 470
Minneapolis, MN 55402

Bassett Creek Water
Sue Virnig

July 31, 2010

BA295-00001 General

Through July 31, 2010
For All Legal Services As Follows:

			Hours	Amount
7/3/2010	CLL	Work on outline of contract with county for participation in TMDL implementation	0.35	66.85
7/6/2010	CLL	Retrieve IRC number and emails with G. Nash regarding tax status of BCWMC; message to L. Kremer regarding contract with county	0.70	133.70
7/13/2010	CLL	Phone call from G. Nash and draft proposed resolution accepting donation	0.35	66.85
7/14/2010	CLL	Emails to G. Nash regarding donation; review agenda materials	0.45	85.95
7/15/2010	CLL	Phone call from L. Kremer regarding county action on CIP; attend commission meeting	3.65	697.15
7/20/2010	CLL	Review letter to Opat	0.05	9.55
7/26/2010	CLL	Letter to A. Herbert regarding insurance	0.10	19.10
7/26/2010	CLL	Review emails on county approval of minor plan amendment	0.30	57.30
7/27/2010	CLL	Review additional materials on county approval of plan amendment	0.10	19.10
		Total Services:	**$**	**1,155.55**

For All Disbursements As Follows:

	Photocopies	2.00
	Postage	2.10
6/17/2010	Charles L. LeFevere; Mileage expense	5.00
7/15/2010	Charles L. LeFevere; Mileage expense	5.00

Kennedy & Graven, Chartered
200 South Sixth Street
Suite 470
Minneapolis, MN 55402

Bassett Creek Water
Sue Virnig

July 31, 2010

Total Disbursements:	**$**	**14.10**
Total Services and Disbursements:	**$**	**1,169.65**

Invoice

Southdale Mini Print
6800 France Avenue South #12
Edina, MN 55

Date	Invoice No.
08/19/10	1118

Bill To:
Bassett Creek Watershed Management 6920 Hillcrest Lane Edina, MN 55435

P.O. Number	Terms
	1.5% over 30

Item	Description	Quantity	Amount
Printing	2 Color Letterhead + output	1,000	161.10T
PMS		2	50.00T
Shipping			7.00T
	Sales Tax		15.87

Total	$233.97

INVOICE

INVOICE DATE: 9/13/10

Geoff Nash, Watershed Consulting, LLC
6920 Hillcrest Lane
Edina, MN 5435
952-925-5119

Client: Bassett Creek Watershed Management Commission

Dates: August 1-31, 2010

Task/Project	8/2/10	8/3/10	8/4/10	8/5/10	8/6/10	8/9/10	8/10/10	8/11/10	8/12/10	8/13/10	8/16/10	8/17/10	8/18/10	8/19/10	8/20/10	8/23/10	8/24/10	8/25/10	8/26/10	8/27/10	8/30/10	8/31/10				Month
Commission Meeting/Prep.	1.0					1.5		0.5				2.0	2.0	4.0											11.0
Administrative	1.0	2.0	1.0	2.0	3.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	3.0	1.0	1.0	2.0	1.0	1.0				32.0
Administrative Committee Meeting/Prep.																										0.0
Budget Committee Meeting/Prep.																										0.0
Education/Outreach Committee meeting/prep.																										0.0
TAC Meeting/Prep.						1.0														2.0	1.0					4.0
Medicine Lk. TMDL																										0.0
Sweeney Lk. TMDL	1.0	1.0						0.5	1.0													1.0				4.5
Wirth Lk. TMDL																										0.0
Hennepin Co. Groundwater Planning																										0.0
Communication with Commission/Consultants																	3.5	2.5								6.0
Policy Manual							3.0		1.5												1.0					5.5
Major Amendment WMP																										0.0
Annual Report 2009																										0.0
Third-party meeting		2.0	1.0												1.0											4.0
CIP																										0.0
Daily Total:	3.0	5.0	2.0	2.0	3.0	3.5	4.0	3.0	4.5	1.0	1.0	3.0	3.0	5.0	2.0	2.0	6.5	3.5	1.0	4.0	3.0	2.0	0.0	0.0	0.0	
Weekly Hours:					15.0					16.0					14.0					17.0					5.0	
Monthly Hours:																										67.0
Hourly Charges (at $47/hr):																										$3,149.00
Actual Charges:																										$2,911.38

Expenses:	8/2/10	8/3/10	8/4/10	8/5/10	8/6/10	8/9/10	8/10/10	8/11/10	8/12/10	8/13/10	8/16/10	8/17/10	8/18/10	8/19/10	8/20/10	8/23/10	8/24/10	8/25/10	8/26/10	8/27/10	8/30/10	8/31/10				Month
Telephone																										$60.78
Printing-black&white ($0.15/sheet)						20					4			10							4					$10.34
Printing-color ($0.50/sheet)																3										$1.50
Postage ($0.44 ea.)																										$6.00
Mileage ($0.50/mile)														20												$10.00
Expenses:																										$88.62

Total invoice amount: $3,000.00

Watershed Consulting, LLC
6920 Hillcrest Lane
Edina, MN 55435
(952) 925-5119 office
(952) 240-3025 cell.

See attached Verizion invoices.
Note: July Verizion invoice - previous Verzion invoice = BCWMC monthly billed amount.

verizonwireless

777 BIG TIMBER ROAD
ELGIN, IL 60123

Manage Your Account	Account Number	Date Due
My Verizon at www.verizonwireless.com	[redacted]	09/17/10
	Invoice Number	[redacted]

10045732 02 AT 0.482 **AUTO T3 0 4422 55435-160620 1 345 E GTPL2209

CAMILLE NASH
6920 HILLCREST LN
EDINA, MN 55435-1606

Quick Bill Summary

Jul 23 – Aug 22

Previous Balance *(see back for details)*	[redacted]
Payment – Thank You	[redacted]
Balance Forward	[redacted]
Monthly Access Charges	$169.95
Usage Charges	
Voice	$.00
Data	$.00
Verizon Wireless' Surcharges and Other Charges & Credits	$8.33
Taxes, Governmental Surcharges & Fees	$16.73
Total Current Charges	**$195.01**
Previous Invoice:	# 134.23
Current Month:	# 60.78
Total Charges Due by September 17, 2010	**$195.03**

Verizon Wireless News

Keep Your Group in the Loop! With Group Communication, exclusive from Verizon Wireless, you can talk, text or send a voice message to everyone on your account or a customized group, using a single number. Visit verizonwireless.com/groupcomm

Pay from Wireless	Pay on the Web	Questions:
#PMT (#768)	My Verizon at www.verizonwireless.com	1 800.922.0204 or *611 from your wireless

VN

verizonwireless

Bill Date August 22, 2010
Account Number [redacted]
Invoice Number [redacted]

CAMILLE NASH
6920 HILLCREST LN
EDINA, MN 55435–1606

pd

Total Amount Due by September 17, 2010

Make check payable to Verizon Wireless
Please return this remit slip with payment

$195.03

$ ☐☐☐.☐☐

P.O. BOX 25505
LEHIGH VALLEY, PA 18002–5505

☐ Check here and fill out the back of this slip if your billing address has changed or you are adding or changing your email address.

244901516901088067033500001000019501000019503 9

NOTICE: Bank account and routing numbers will be retained to enable future payments by phone or online. To opt out, call 1–866–544–0401.

G.Nash - copies of Policy Manual

FedEx Office

FedEx Office is your destination
for printing and shipping.

3535 Hazelton Rd
Edina, MN 55435-4208
Tel: (952) 820-6000

8/31/2010 3:19:47 PM CST
Team Member: John M.

SALE

FS BW SS Standard	42 @	0.1100 T
0001 Regular Price	0.11	
FS AS Machine Staple	1 @	0.0200 T
0078 Regular Price	0.02	
Regular Total	4.64	
Discounts	0.00	
Total	**4.64**	

Sub-Total	4.64
Tax	0.34
Deposit	0.00
Total	**4.98**
Visa (S)	4.98
Account: 5198	
Auth: 00533C (A)	
Total Tender	4.98
Change Due	0.00
Total Discounts	**0.00**

Postage - BCWMC

BYERLY'S

Edina
Gen. Manager Mark Bartusch
952-831-3601
Open 6am - midnight

Cashier:Jeff F

09/01/10 18:47:30

4 @ 1.39		
POST OFFICE	130	5.56
SUBTOTAL		5.56
TOTAL TAX		.00
TOTAL	5.56	
Visa TENDER		5.56
Acct:XXXXXXXXXXXX5198		
APPRVL CODE 02330C		
Cash CHANGE		.00
NUMBER OF ITEMS		4

------- FSA Total $0.00 --------

Trx:303 Oper 804 Term: 13 Store: 1003
09/01/10 18:47:46

Item 5A

Feasibility Report for
Bassett Creek Restoration Project - Reach 1

Crystal • Golden Valley • Medicine Lake • Minneapolis
Minnetonka • New Hope • Plymouth • Robbinsdale • St. Louis Park

Bassett Creek Watershed Management Commission

September 2010

Feasibility Report for Bassett Creek Restoration Project—Reach 1

Golden Valley, Minnesota

Prepared for Bassett Creek Watershed Management Commission

September 2010

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the Laws of the State of Minnesota.

_____

Jeffrey D. Weiss
Reg. No 48031 Date September 16, 2010

Prepared by
Barr Engineering Company
4700 West 77th Street • Minneapolis, MN 55435-4803
Phone: 952-832-2600 • Fax: 952-832-2601

Feasibility Report for
Bassett Creek Restoration Project—Reach 1

September 2010

Table of Contents

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1.0 Executive Summary

1.1 Background

In January 2007 the Bassett Creek Watershed Management Commission's Technical Advisory Committee recommended that the Commission add stream channel restoration projects to the Commission's 10-year Capital Improvements Program (CIP). The restoration projects included the Main Stem of Bassett Creek, the North Branch of Bassett Creek, the Sweeney Lake Branch of Bassett Creek, and Plymouth Creek. The Commission completed a draft Resource Management Plan (RMP) in April 2009 (updated July 2009) that included several stream restoration projects. Bassett Creek Reach 1 was one of the stream projects included in the RMP; the project includes the restoration of a reach from Wisconsin Avenue to the Golden Valley-Crystal boundary (approximately 1,600 feet upstream of Highway 100) (see **Figure 1**, Location Map). Restoration of this reach is included in the Commission's CIP for design and construction in 2011; however only a portion of the reach identified in the CIP is included in this feasibility study. Therefore, Bassett Creek Reach 1 has been broken into three subreaches (Figure1). The two subreaches included here—Subreach 1 from Wisconsin Avenue to Rhode Island Avenue and Subreach 3 from Duluth Street to the Golden Valley-Crystal border—cover approximately 6,300 feet of the total of approximately 15,800 feet in Reach 1. Subreach 2 includes the remaining 9,500 feet between Rhode Island Avenue and Duluth Street.

1.2 General Project Description and Estimated Cost

The potential stabilization measures identified for implementation in this reach consist of the following:

- removal of trees and vegetation,
- grading reaches of stream bank,
- stabilizing storm sewer outfalls that discharge into the channel,
- establishing new vegetation on areas disturbed by construction,
- installing a variety of stream stabilization measures to address erosion problems, including riprap, biologs, cross vanes, j-vanes, live stakes, live fascines, and vegetated reinforced soil slope (VRSS).

The Reach 1 (Subreaches 1 and 3) construction costs are estimated to be $580,200. A detailed cost estimate is included in **Section 4.3**. Temporary construction easements are not included in the cost estimate at this time, but they are not expected to significantly increase the total cost. The proposed

restoration work within the City of Golden Valley is on a mix of public and private property. Approximately half of Subreach 3 is located on public property within the Bassett Creek Nature Area. The remainder of Subreach 3 and all of Subreach 1 is on private property and will require temporary construction easement acquisitions to complete construction.

1.3 Recommendations

The Commission's CIP includes restoration of Subreach 1 and Subreach 3 of Bassett Creek Reach 1, with design and construction to begin in 2011. The stabilization of this reach will provide water quality improvement by 1) repairing actively eroding sites; and 2) preventing erosion at other sites by installing preemptive measures to protect existing stream banks. This project is relatively cost efficient because no permanent easements will be required.

It is recommended that the restoration of Subreaches 1 and 3 of Bassett Creek Reach 1 proceed into the design and construction phase. It is also recommended that the Bassett Creek CIP be revised to reflect the revised cost estimate for Subreaches 1 and 3.

2.0 Background and Objective

2.1 Goals and Objective

Subreaches 1 and 3 of Bassett Creek Reach 1 have erosion problems in at least 15 locations. The objective of this study is to review the feasibility of implementing measures to stabilize the stream banks and storm sewer outfalls on these two subreaches of Bassett Creek Reach 1and to provide conceptual designs and cost estimates of measures that could potentially be used at each of the 15 erosion sites.

Stream Stabilization

The City of Golden Valley has recognized the importance of addressing stream erosion and sedimentation issues; however, funding limitations have prevented repair of these sites to date. With the availability of funding from the BCWMC, repair of these sites can now proceed.

The City of Golden Valley has completed periodic erosion inventories along Bassett Creek, beginning in 2003. The latest inventory identified 11 erosion sites in Subreaches 1 and 3, all with moderate erosion. As stated earlier, Barr staff added four sites (Sites 7, 9, 10, and 12) with minor to moderate erosion or the potential for erosion problems in the near future. One of the sites identified as moderate erosion was reclassified as severe erosion.

The goals of the stream stabilization project are to:

- Stabilize eroding banks to improve water quality.
- Preserve natural beauty along Bassett Creek and contribute to the natural habitat and species diversification in place by planting eroded areas with native vegetation.
- Prevent future channel erosion along the creek and the resultant negative water quality impact of such erosion on downstream water bodies.

Considerations

- Restoration must minimize floodplain impacts. Several businesses and residences are located near the creek, so it is critical to ensure the proposed project does not increase flood elevations that impact these properties.

- Maintain existing floodplain storage and cross sectional areas.

2.2 Background

2.2.1 Reach Description

Bassett Creek Reach 1 (**Figure 1**) extends for approximately 15,800 feet from Wisconsin Avenue downstream to the Golden Valley-Crystal city boundary. Two subreaches are included in this feasibility study. The first (Subreach 1) is approximately 2,100 feet, extending from Wisconsin Avenue to Rhode Island Avenue. The second subreach (Subreach 3) is approximately 4,200 feet, extending from Duluth Street to the Golden Valley – Crystal city boundary. Land use immediately adjacent to Subreach 1 is a mix of high density residential (apartments and condominiums) and commercial/industrial. Land use immediately adjacent to Subreach 3 is predominantly single family residential.

Barr Engineering (Barr) staff walked the reach in July 2010 and identified a total of seven sites on Subreach 1 and eight sites on Subreach 3 that require stabilization to address bank erosion, scour, and/or bank failure. Of the 15 sites, six have minor erosion, seven have moderate erosion, and two have severe erosion problems. The total length of bank erosion is approximately 890 feet. Photos of each of the erosion sites are found in Appendix A. The bank failures along this reach appear to be caused by a combination of natural stream erosion processes and problems associated with changing watershed hydrology. Even when cities incorporate best management practices (BMPs) to minimize the impacts of increased runoff, development still fundamentally changes the hydrology of the watershed. The BMPs commonly used reduce the impacts of urban development on streams receiving stormwater runoff, but physical changes and increased rates of erosion occur.

In addition to the problem erosion sites, there are three locations where trees have fallen across the stream. Fallen trees in streams are a natural occurrence and play a vital role in some natural stream processes. They can act as grade control and provide structure. However, they can contribute to an increase in localized erosion, which is the reason why one of the trees is recommended for removal. There are also 13 storm sewer outfalls within the two subreaches. One of the storm sewer outfalls has some significant erosion problems adjacent to it and is included in restoration at one of the problem erosion sites. The rest of the storm sewer outfalls appeared to be stable and do not need any modifications or stabilization to prevent increased erosion in the foreseeable future.

Implementation of the project will require coordination between the BCWMC and the City of Golden Valley to ensure long term project success. Most importantly, the City of Golden Valley will need to

assist in the maintenance of the streambank stabilization measures, particularly providing maintenance of the vegetation, since poor vegetation management practices are a common cause of bank failures. A major aspect of the vegetation maintenance will be the cities working with the private landowners to ensure that the plantings and maintenance meets the objectives of stream bank stabilization effort while considering the landowners' needs.

2.2.2 Past Documents and Activities Addressing this Reach

City Erosion Inventories

The City of Golden Valley completed erosion inventories and assessments on the Bassett Creek Main Stem as it flows through the City. The City updates its inventory annually.

City staff completed the inventories by walking the length of Bassett Creek and identifying, locating, and documenting sites of significant bank erosion and sediment deposition, as well as the presence of obstructions, storm sewer outlet structures, and other utilities within the stream channel. Documentation included location of the site on aerial photographs, notes on the details of each site, and a digital photograph of each site.

The inventories included an estimate of the extent of erosion, measured as a percent of the entire bank that was eroding, and each site was classified as minor (less than 25%), moderate (25 – 50%), and severe (more than 50%). Typically, the causes of erosion were related to the following:

- concentrated runoff from parking lots, streets, and open channel drainage
- storm sewer outfalls discharging above the normal water level of the creek
- surface runoff across exposed unvegetated slopes, steep slopes, or shaded slopes
- areas where turf is maintained to the edge of the creek with no vegetative buffer area.

Additionally, the inventories identified problems with utility structures, including

- rusty corrugated metal pipes
- broken or cracked concrete pipes
- pipes separated at the joints
- flared end sections that have been removed or fallen into disrepair due to erosion
- buried pipe outlets
- significant deposition at the outlet of a structure
- debris blocking a structure
- protruding pipes and outlets located above the normal water level of the creek

The City of Golden Valley's erosion inventory identified five erosion sites within Subreach 1 and six erosion sites within Subreach 3, for a total of 11 erosion sites. All sites for these two subreaches were classified as having a moderate erosion problem. There were also four obstructions, including two on each sub-reach, and 24 utility structures, including 15 utility structures on Subreach 1 and nine utility structures in Subreach 3, identified in the erosion inventory. When Barr staff reviewed the reach in 2010, four additional sites were identified as having minor to moderate erosion problems or the potential for erosion problems in the near future. Combining the 11 sites identified by the cities and the four sites added by Barr staff brings to 15 the number of sites along the reach.

BCWMC

As part of the *Bassett Creek Main Stem Watershed Management Plan* (2000), the BCWMC estimated the sediment and phosphorus loading to Bassett Creek from channel erosion. Three erosion scenarios were evaluated for increased loadings resulting from three levels of channel erosion - minor, moderate, and severe. The most likely scenario for Bassett Creek was between the moderate and severe scenarios with approximately ten percent of the stream channel suffering from erosion. Similar scenarios were used to estimate the additional loading of phosphorus to Bassett Creek.

The study results indicated that moderate channel erosion could contribute an additional 1,000,000 pounds of suspended sediments annually (increase from approximately 500,000 pounds to 1,500,000 pounds) and 50 pounds of phosphorus annually (increase from approximately 2,650 pounds to 2,700 pounds) to the Main Stem of Bassett Creek. The study results also showed that stabilizing the Main Stem of Bassett Creek could reduce total phosphorus (TP) loads by an estimated 96 pounds per year and total suspended solids (TSS) loads by an estimated 200,000 pounds per year.

More recent computations completed for this feasibility study show that restoring this reach of Bassett Creek could reduce TP loads by an estimated 60 pounds per year and TSS loads by an estimated 105,000 pounds per year.

The BCWMC Watershed Management Plan recognized the need to restore stream reaches damaged by erosion or affected by sedimentation. The BCWMC established a fund to cover the costs of channel stabilization projects. However, the fund as authorized was insufficient to cover the costs of all of the identified projects. In January 2007 the BCWMC's Technical Advisory Committee recommended that the Commission add stream channel restoration projects to the Commission's ten-year CIP. The BCWMC then went through a process to identify potential channel restoration projects by stream reach, prepared cost estimates for the restoration of the reach, prioritized the

restoration projects, and added the larger projects to the CIP. These restoration projects included the Main Stem of Bassett Creek, the North Branch of Bassett Creek, the Sweeney Lake Branch of Bassett Creek, and Plymouth Creek. These reaches of the creek have experienced increased stream bank erosion, streambed aggradation, or scour. These erosion and aggradation processes are a combination of natural processes, and increased runoff volumes and higher peak discharges in these reaches of the creek that occur with urban development in the watershed. The sediment load from the erosion and scour increases phosphorus loads to downstream water bodies, decreases the clarity of water in the stream, destroys aquatic habitat, and reduces the discharge capacity of the channel. The Commission added several of these channel restoration projects to their long range CIP in May of 2007, including Reach 1 of Bassett Creek.

The BCWMC completed a draft Resource Management Plan (RMP) in April 2009 (updated July 2009) for water quality improvement projects within the Bassett Creek watershed scheduled for design and construction between 2010 and 2016. The goal of the RMP was to streamline the permitting process with the U.S. Army Corps of Engineers (USACE) for all of the projects. The RMP provided concept designs for stabilizing the stream banks along this reach of Bassett Creek as well as background information about impacts to wetlands, threatened and endangered species, and cultural and historical resources. The entire Reach 1 of Bassett Creek was included in the RMP, including the two subreaches included in this feasibility study. Relevant information from the RMP is included in this feasibility study.

Table 1 presents the restoration projects included in the RMP, along with their estimated start dates and costs.

Table 1 Channel Restoration Projects added to CIP and included in the RMP

Creek Project	Target Project Start	Estimated Project Cost[1]
Plymouth Creek, Reach 1 (PC-1)	2010	$965,200
Bassett Creek Main Stem, Reach 2	2010	$780,000
Bassett Creek Main Stem, Reach 1	2011	$715,000
North Branch	2013	$660,000
Plymouth Creek, Reach 2 (PC-2)	2015	$559,000

[1] Costs as estimated in revised 2009 CIP

In 2008, the City of Golden Valley completed the Commission's first channel restoration project – the Sweeney Lake Branch, King Hill Area project. This project involved restoration of approximately

600 feet of the upstream end of the Sweeney Lake Branch of Bassett Creek. The Plymouth Creek, Reach 1 and Bassett Creek Main Stem, Reach 2 projects are currently underway.

3.0 Site Characteristics

3.1 Bassett Creek Watershed

The watershed area tributary to this reach of Bassett Creek is approximately 16,000 acres and includes approximately 64% of the entire BCWMC watershed. The upstream watershed drains all or portions of Plymouth, Minnetonka, Medicine Lake, New Hope, St. Louis Park, Crystal and Golden Valley. Existing land use includes approximately forty percent single-family residential; twenty-eight percent commercial/industrial; seven percent highway; seven percent parks and undeveloped land; four percent multi-family residential; and water surface area over the remaining land area.

3.2 Stream Characteristics

Reach 1 of the Bassett Creek Main Stem (**Figure 1**) extends for approximately 15,800 feet from Wisconsin Avenue to the Golden Valley – Crystal border. Two subreaches are included in this feasibility study. The first (Subreach 1) is approximately 2,100 feet from Wisconsin Avenue to Rhode Island Avenue. The second subreach (Subreach 3) is approximately 4,200 feet from Duluth Street to the Golden Valley – Crystal city boundary. The stream is relatively shallow in most places except for occasional deep pools. Submergent vegetation was observed along much of Subreach 1; fish, crayfish, and frogs were observed in the creek in both subreaches. The riparian vegetation for Subreach 1 varied considerably between its two banks. The right bank (looking downstream) contained a healthy mix of native trees and shrubs, including willow, cottonwood, poplar and maples. However, the left bank was largely overgrown with buckthorn. The riparian vegetation in Subreach 3 varied from turf grass to native trees and shrubs, depending on how each landowner managed the vegetation.

Barr staff walked the reach to further investigate the scale and severity of the erosion problems for this feasibility study. Barr staff reviewed the previously documented erosion sites and identified additional sites. The sites added by Barr staff are, for the most part, minor erosion sites. These sites were added to the feasibility study as it is more cost effective to fix minor repairs before they become severe, particularly if a contractor is under contract and on-site to complete repairs to adjacent sites.

3.3 Site Access

Access to most of the sites in Subreach 1 will be relatively easy, due to the presence of large parking lots that are near the creek. Access to any site would require minimal clearing of vegetation between the parking lot and the creek. Access for sites within the Bassett Creek Nature Area (between Duluth

Street and Westbrook Road) in Subreach 3 will also be relatively easy. A few sites are located very close to Duluth Street and will be easy to access through the nature area. Other sites located further away from Duluth Street can still be accessed through the nature area or an easement could be acquired to access the sites via a shorter route across private or commercial property. Site access on the northern half of Subreach 3 will be more difficult because most of the sites are located on private property. Access to each site will require crossing private property and restoring the property at the end of the project.

3.4 Wetlands

The wetlands associated with Subreaches 1 and 3 in the Main Stem of Bassett Creek were delineated in accordance to the COE Wetland Delineation Manual and Midwest Regional Supplement. The delineation and assessment was necessary in order to meet the requirement of a Section 404 Permit and the Wetland Conservation Act. The assessment also included the use of the Minnesota Routine Assessment Method (MnRAM 3.0), which is a comprehensive ranking system designed to help qualitatively assess functions and values associated with Minnesota wetlands for the purpose of managing local wetland resources.

Four wetlands totaling approximately 8.84 acres were identified and field delineated. These are primarily floodplain forest riparian wetlands which border the Main Stem for the extent of the study area, and are separated by roads. In addition, MNRAM functional wetland assessments were also performed. The wetlands generally scored low in many environmental criteria. Final design should minimize wetland impacts. A full summary of the wetland delineation, including figures and field data sheets, is in Appendix B.

3.5 Cultural and Historical Resources

A reconnaissance survey of Subreaches 1 and 3 was completed in June 2010 to determine if any sites may require further investigation for cultural or historical importance. The survey was completed by reviewing historical aerial photographs, interviewing local residents, and walking the relevant reaches to observe conditions on the ground. The survey found approximately ten sites with enough archeological potential that justify further investigation before any construction disturbance to the area. Therefore, funds will need to be budgeted during design to further investigate any areas which may be disturbed. If possible, disturbance of areas with highest potential for archeological potential should be avoided or minimized. The full report of the archeological reconnaissance survey, including figures, is included in Appendix C.

4.0 Potential Improvements

4.1 Description of Potential Improvements

As described in Section 1.2, the project along Reach 1 of Bassett Creek consists of a variety of stream stabilization measures to address erosion problems. **Figures 2a** and **2b** show the 15 stabilization sites and **Table 2** lists the potential stabilization measures for each site. The following paragraphs describe the potential stream stabilization practices proposed for this reach. There are dozens of stream restoration techniques that can be used, although not all of them would be practicable or applicable to the stream erosion problems on Bassett Creek. The techniques discussed below and included in the conceptual design are among commonly used techniques. Those included in the concept design were selected for their functionality and the expectation that most contractors have had experience with installation of the technique. The final design will determine the most appropriate measures to use at each individual site to meet the objectives of all parties involved. The final design could include techniques not included in these concept designs.

Riprap

Riprap (also called stone toe protection) is used to protect the toe of the stream bank. In-stream riprap typically consists of cobble-sized rock (six inches to 12 inches in diameter). The riprap is keyed in to the streambed and extends up the bank to approximately the bankfull level elevation. The bankfull level is the elevation of the water in the channel during a 1.5-year return frequency runoff event. In some cases, this level may be below the top of the stream bank. Riprap is typically used in conjunction with planting of the upper banks to provide full bank protection. Riprap is especially effective in heavily shaded areas, where it is difficult to establish vegetation. **Figure 3** illustrates this practice.

Cross Vanes

Cross vanes (or constructed riffles) are drop structures, which are typically constructed of boulders and rocks to flatten the slope of the channel and reduce the velocity of the flow in the channel. Cross vanes extend across the creek bottom, and are embedded in each bank. Cross vanes direct the main flow to the center of the stream to reduce bank erosion. **Figure 4** illustrates this practice.

J-Vanes

J-vanes (also called rock vanes) are constructed of boulders embedded into the creek bottom. The vanes are embedded in the stream bank and are oriented upstream to direct the flow away from that

bank. J-vanes typically occupy no more than one-third of the channel width. **Figure 5** illustrates this practice.

Vegetated Reinforced Slope Stabilization (VRSS)

VRSS is a bioengineering method that combines rock, geosynthetics, soil, and plants to stabilize steep, eroding banks. VRSS typically involves protecting layers of soil with a blanket or geotextile material creating "soil lifts" (also called "soil pillows") and planting or seeding native vegetation on the slope. The vegetation's root systems provide the long-term slope stabilization. **Figure 6** illustrates this practice.

Pipe Outlet Stabilization

Pipe outlet stabilization measures vary according to specific site circumstances and problems. At most sites, additional rock riprap is needed at the pipe outlet. In other cases, pipe realignment and/or lowering of the pipe may be needed to correct existing problems, prevent future erosion, and prevent pipe failure. **Figure 7** illustrates this practice.

Biologs

Biologs are natural fiber rolls made from coir fiber that are laid along the toe of the stream bank slope to stabilize the toe of the stream bank. Biologs 10 – 22 inches in diameter are typically used. Because they are made of natural fiber, vegetation can grow on the biologs. When needed, grading of the stream bank slope above the biolog is used to create a more stable slope (2:1 to 3:1). **Figure 8** illustrates this practice.

Live Stakes

Live stakes are dormant stem cuttings, typically willow and dogwood species. They are collected and installed during the dormant season (late fall to early spring) and grow new roots and leaves, quickly and cheaply establishing woody vegetation on a stream bank. The willows and dogwoods grow into stands that provide long lasting bank protection. **Figure 9** illustrates this practice.

Live Fascines

Live fascines also use dormant willow and dogwood cuttings collected and installed during the dormant season. In this case, the cuttings are bundled together and planted in a row parallel to the stream flow. They can be effective in reducing sheet erosion along a slope because a portion of the fascine extends above the ground surface. The willows and dogwoods grow into linear stands of shrubs that provide long lasting bank protection. **Figure 10** illustrates this practice.

Site Grading

In many places, the eroding bank will be graded to a 3:1 slope. This provides a stable slope that will not naturally slough and it provides a surface that is flat enough on which vegetation can be planted or seeded.

Table 2 Potential stabilization measures at each site.

Site #	Station	Potential Stream Stabilization Practices[1]	Photos[2]
1	14+00	Install biolog for additional toe protection. Install shade tolerant shrubs. Remove four trees. Plant shady woods mix of native grasses and extent into turf grass in the lawn.	1, 2
2	18+00	Install VRSS to stabilize steep slope. Remove eight trees during VRSS installation.	3, 4
3	24+00	Grade bank to a 3:1 slope. Install riprap for toe protection. Seed bank with native grasses.	5
4	25+50	Install two j-vanes. Grade bank to a 2:1 slope. Install biolog. Remove six trees. Plant shade tolerant shrubs and grasses.	6, 7
5	40+00	Grade bank to 2:1 slope. Install biolog for toe protection. Plant shrubs and trees. Remove eight trees.	8, 9
6	48+50	Grade bank to 3:1 slope Install riprap for toe protection. Install two j-vanes. Remove two trees. Seed bank with native vegetation and cease mowing to top of bank.	10
7[3]	49+00	Fill in eroded channel with excess material from grading at other sites. Install riprap at both ends of the eroded channel. Install live fascines on bank above riprap. Remove four trees.	11, 12
8	49+75	Install riprap for toe protection. Install two j vanes. Install biologs and live stakes. Remove 12 trees.	13
9[3]	149+00	Replace flared end section. Install riprap around flared end section. Remove four trees.	14
10[3]	151+50	Install two cross-vanes. Install biolog. Install live stakes in the bank. Remove three trees.	15, 16
11	156+50	Remove fallen tree. Install live stakes in eroding bank	17, 18
12[3]	160+00	Remove buckthorn. Install biolog and live stakes. Remove three trees.	19

Site #	Station	Potential Stream Stabilization Practices[1]	Photos[2]
13	161+50	Install biolog. Install live stakes. Install fascines. Remove two trees.	20
14	164+50	Fill in eroded bank. Install riprap at toe Install turf reinforcement mat to handle flows from parking lot. Remove six trees.	21
15	169+00	Fill in eroded bank. Install riprap at toe Install turf reinforcement mat to handle flows from parking lot. Remove eight trees.	22

[1] All sites will be planted or seeded with native grasses, shrubs, and trees. The final design phase will determine which practices will be used at each site and may or may not use the practices specified in this table.

[2] Photos are located in Appendix A

[3] Sites added by Barr Engineering

4.2 Project Impacts

4.2.1 Easement Acquisition

Construction easements will be required to complete the stabilization work for this project because the majority of the erosion sites occurring are located on private property. Estimates for the construction easements are not included in this feasibility study.

4.2.2 Permits Required for Project

The proposed project will require 1) a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE) and Section 401 certification from the Minnesota Pollution Control Agency (MPCA), 2) compliance with the Minnesota Wetland Conservation Act, and 3) a Public Waters Work Permit from the Minnesota Department of Natural Resources (MNDNR). The proposed project should also follow the MPCA's guidance document for managing dredged materials.

Section 404 Permit

The COE regulates the placement of fill into wetlands, if the wetlands are hydrologically connected to a Waters of the United States, under Section 404 of the Clean Water Act (CWA). In addition, the COE may regulate all proposed wetland alterations if any wetland fill is proposed. The MPCA may be involved in any wetland mitigation requirements as part of the CWA Section 401 water quality certification process for the 404 Permit.

The Bassett Creek project was included in the *Resource Management Plan for Bassett Creek Watershed Management Commission Water Quality Improvement Projects 2010 – 2016* submitted to

the COE in April 2009 (revised in July 2009). The goal of the *Resource Management Plan* (RMP) is to complete on a conceptual level the COE permitting process for all of the projects proposed.

The COE 404 permit requires a Section 106 review for historic and cultural resources. The results of the archeological reconnaissance study are included as Appendix C. If more detailed information is requested by the State Historic Preservation Office (SHPO), then a Phase I Archaeological Survey may need to be completed. A Phase I Archaeological Survey can be completed in 45 days or less during the frost-free period. The COE staff anticipates that the 404 permit review and approval process could require 120 days to complete.

Minnesota Wetland Conservation Act

The Wetland Conservation Act (WCA) regulates the filling and draining of wetlands and excavation within Type 3, 4, and 5 wetlands. In addition, the WCA may regulate all types of wetland alteration if any wetland fill is proposed. The WCA is administered by local government units (LGU), which include cities, counties, watershed management organizations, soil and water conservation districts, and townships. Golden Valley is the LGU for the proposed project site. The Minnesota Board of Water and Soil Resources (BWSR) oversees administration of the WCA statewide.

The proposed project will only involve grading existing stream banks and other stream bank work. This type of work can generally be considered self mitigating and will not require wetland mitigation, but all work requires review by the LGU.

Public Waters Work Permit

The MNDNR regulates projects constructed below the ordinary high water level of public waters or public waters wetlands, which alter the course, current, or cross section of the water body. Public waters regulated by the MNDNR are identified on published public waters inventory (PWI) maps. Bassett Creek is a public water/water course, so the proposed work will require a MNDNR public waters work permit.

Subreach 1, from Wisconsin Avenue to Rhode Island Avenue, is a designated County Ditch (CD 23, 25, 30).

4.2.3 Other Project Impacts

Tree Loss

The proposed project includes the removal of approximately 71 trees. All of the trees are located in areas where bank grading or site access will be necessary. A detailed tree inventory should be completed during the final design process.

Water Quality Impacts

The proposed stabilization measures will result in a reduction of the sediment and phosphorus loading to Bassett Creek and all downstream water bodies, including the Mississippi River and Lake Pepin. As discussed in Section 2.2.2, stabilizing this reach is estimated to reduce TP loads by 60 pounds per year and TSS loads by 105,000 pounds per year.

4.3 Cost Estimate

The estimated project cost for the Bassett Creek Restoration Project is $580,200 for design and construction. The cost estimate uses the following assumptions:

- The cost estimate assumes an additional 50% of construction costs will be needed for final design, permitting, construction observation, and contingency.
- Construction easements will be necessary to construct the project; however the cost is expected to be negligible.
- The cost estimate includes the costs of testing stream bank material for hazardous compounds that would require them to be treated as dredged materials per MPCA regulations. For cost estimating purposes, it is assumed that hazardous compounds and pollution that will require special disposal of excavated stream bank material are present at some these sites and that 50% of the soil to be taken off site will require treatment.
- Additional work will be required to determine if cultural and/or historical resources are present at any project site.

A feasibility-level cost estimate for the project construction is included in **Table 3. Figures 2a** and **2b** shows the corresponding site numbers and stationing referenced in **Table 3**.

4.3.1 Temporary easements

The costs of obtaining temporary construction easements within the City of Golden Valley are often negligible, and no costs for temporary construction easements are included in this cost estimate. However, for Sites 11 – 15 located adjacent to commercial property, it may be the best interest of the City to acquire right-of-way access (or a permanent easement) to access the creek at these locations. Commercial properties often require a lengthy time period to complete easement issues, and a permanent easement will make it possible to access the creek at these locations whenever it is required. It will also provide an opportunity for the City to manage the riparian vegetation to eliminate invasive plant species. The estimated cost for right-of-way acquisition is $40,000.

4.3.2 Off-site sediment disposal

The cost estimate includes the costs of a Phase I assessment of the bank material for hazardous compounds that would require them to be treated as dredged materials per MPCA regulations. It is assumed that approximately one half of the excavated material (approximately 420 cubic yards) will require special disposal at an estimated costs of $24,700 (**Table 3**).

4.3.3 Wetland mitigation

As discussed in Section 4.2.2, stream bank restoration and repair is considered to be a self-mitigating wetland impact. Stream banks are considered to be wetlands and disturbing the banks as part of a restoration project is a temporary wetland impact. However, because the nature of stream bank repair and restoration is to create a stable bank that can support a riparian ecosystem, the impacts are considered to be self-mitigating. Therefore, stream bank restoration projects do not require an additional cost for wetland mitigation.

4.3.4 Tree replacement

The cost estimate (Section 4.3) assumes that trees will be replaced on a two-to-one (2:1) basis. It also assumes that the replacements will be made at the site where the original trees were removed. Therefore, if five trees are removed at a given site, then ten trees will be planted during site restoration. The two-to-one replacement ratio assumes that over time, there will be some tree loss due to natural causes (storm/wind damage, disease, etc) and natural competition.

4.3.5 Percentages of estimated construction costs

The cost estimate also assumes that 10% of the construction costs will be for mobilization and demobilization. This cost is included in the site subtotal for each site.

4.3.6 Archeological investigation

The Historical and Cultural report (Appendix C) identified several sites that justify additional investigation prior to disturbance during construction. The estimated cost for this investigation is $10,000.

4.3.7 Miscellaneous

Most sites include various miscellaneous items that are needed during construction. Such items include a rock construction entrance, a filter dike to control in-stream sediment disturbance, and restoration of access paths. Together, these items total approximately $6,000. Because some sites are close together, a single filter dike can be used to control in-stream sediment from multiple sites. Likewise, a single construction entrance and access path restoration can be used for multiple sites. Therefore, these items were not included in the cost estimate for each site.

The opinion of probable construction costs provided in this report is made on the basis of Barr's experience and qualifications, and represents our best judgment as experienced and qualified professionals familiar with the project. The cost opinion is based on project-related information available to Barr at this time and includes a conceptual-level design of the project.

4.4 Funding Sources

The City of Golden Valley proposes to use BCWMC capital improvement program (CIP) funds to pay for its portion of the project costs. BCWMC channel restoration projects are funded through the BCWMC's CIP and are paid for via an ad valorem tax levied by Hennepin County over the entire Bassett Creek watershed.

It is the policy of the City of Golden Valley that stream restoration on private land is to be completed on a 50% cost share basis with the land owner. Arrangements can be made with the landowner for their portion of the project costs, such as special assessment on the property to recover project costs over time.

4.5 Project Schedule

The design for this project is slated to begin in 2011. The construction work will likely be completed during the winter of 2011—2012. For project work to occur in 2011, the Commission must hold a public hearing and order the project in time for the Commission's submittal of its 2011 ad valorem tax levy request to Hennepin County by October 1, 2010. If project construction is to occur in fall or winter, it is recommended that the project bidding take place in the summer. This will allow

contractors to acquire plants and seeds at a reasonable price for the required quantities. In the intervening time, the City will gather public input, conduct the environmental review, prepare the final design, and obtain permits.

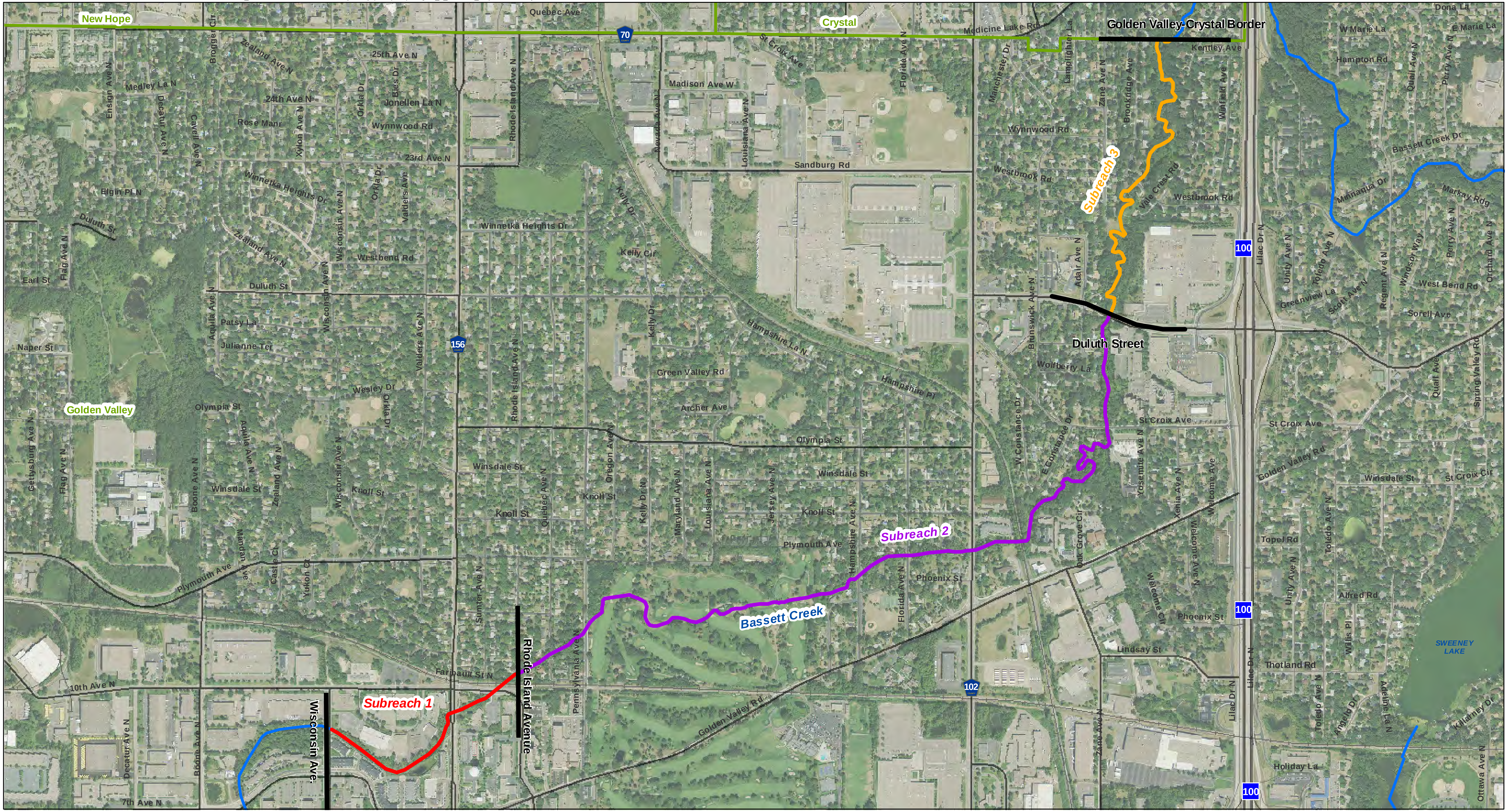
Table 3. Site Locations, Potential Stream Stabilization Practices, and Overall Cost Estimate for Bassett Creek Reach 1.

Site #	Downstream station [1]	Site length (feet)	Proposed stream stabilization practices	Site Subtotal
1	14+00	75	150' of biolog; remove 4 trees; shade-tolerant shrubs; shade-tolerant grass mix	$ 17,300
2	18+00	50	500 sq. ft of VRSS; remove 8 trees	$ 41,700
3	24+00	75	Grade banks to 3:1; riprap for toe protection; seed with native grasses.	$ 16,800
4	25+50	50	Grade bank to 2:1 slope; 2 j-vanes; 100' biolog; remove 6 trees; shade-tolerant shrubs and seed mix	$ 27,600
5	40+00	75	Grade bank to 2:1 slope; 150' biolog; remove 8 trees; plant trees and shrubs	$ 24,000
6	48+50	125	Grade bank to 3:1 slope; riprap for toe protection; remove 2 trees; native seeding	$ 22,600
7[3]	49+00	25	Fill eroded channel with material from site 6; 25' of riprap at each end of eroded channel; 25' of fascine above riprap; remove 4 trees	$ 17,600
8	49+50	100	2 j-vanes; riprap for toe protection; 200' biolog; 50 live stakes; remove 12 trees	$ 32,300
9[3]	149+00	10	Replace flared end section; riprap around new FES; remove 4 trees.	$ 16,900
10[3]	151+50	100	2 cross vanes; 200' biolog; 100 live stakes; remove 3 trees	$ 23,300
11	156+50	15	Remove fallen tree; 20 live stakes	$ 1,100
12[3]	160+00	100	Remove buckthorn; 200' biolog; 100 live stakes; remove 3 trees	$ 21,700
13	161+50	50	100' biolog; 100' live fascines; 50 live stakes; remove 2 trees	$ 15,900
14	164+50	20	200 sq ft of turf reinforcement mat; fill eroded bank; riprap at toe of eroded bank; remove 6 trees	$ 28,300
15	169+00	20	200 sq ft of turf reinforcement mat; fill eroded bank; riprap at toe of eroded bank; remove 8 trees	$ 29,900
			Phase 1 assessment for contaminated soils and off-site disposal	$ 16,400
			Subtotal	*$ 353,400*

Design, Permitting, and Administration (25%)	$ 88,350
Subtotal	*$ 441,750*
Construction Contingency (20%)	$ 88,350
Additional Cultural and Historical Investigation	$ 10,000
Right-of-Way acquisition	$ 40,000
Summation	**$ 580,200**

(1) Stream stationing: 0+00 at confluence with North Branch Bassett Creek
(2) All sites include restoration seeding and erosion control blanket for disturbed areas, and a 2:1 tree replacement as needed.
(3) Sites added by Barr Engineering

Figures



Legend

Bassett Creek Reach 1

- Subreach 1
- Subreach 2
- Subreach 3
- streams
- Municipal Boundaries

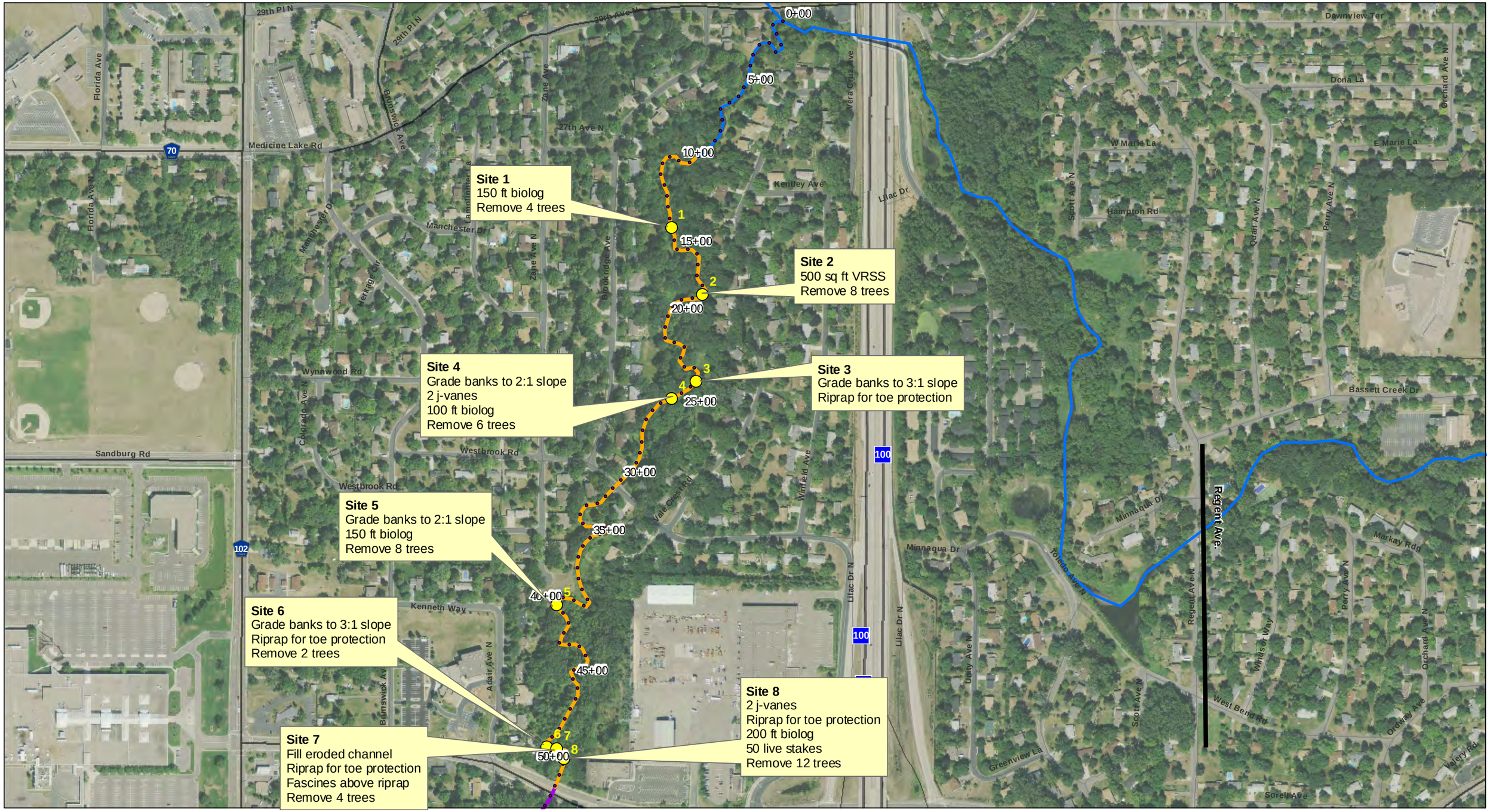
Bassett Creek Watershed Management Commission
www.bassettcreekwmo.org

1,000 500 0 1,000 Feet

N E S W

BASSETT CREEK MAIN STEM
REACH 1

Figure 1
Bassett Creek Restoration Project
Bassett Creek
Watershed Management Commission
August 2010



Bassett Creek Watershed Management Commission
www.bassettcreekwmo.org

400 200 0 400 Feet

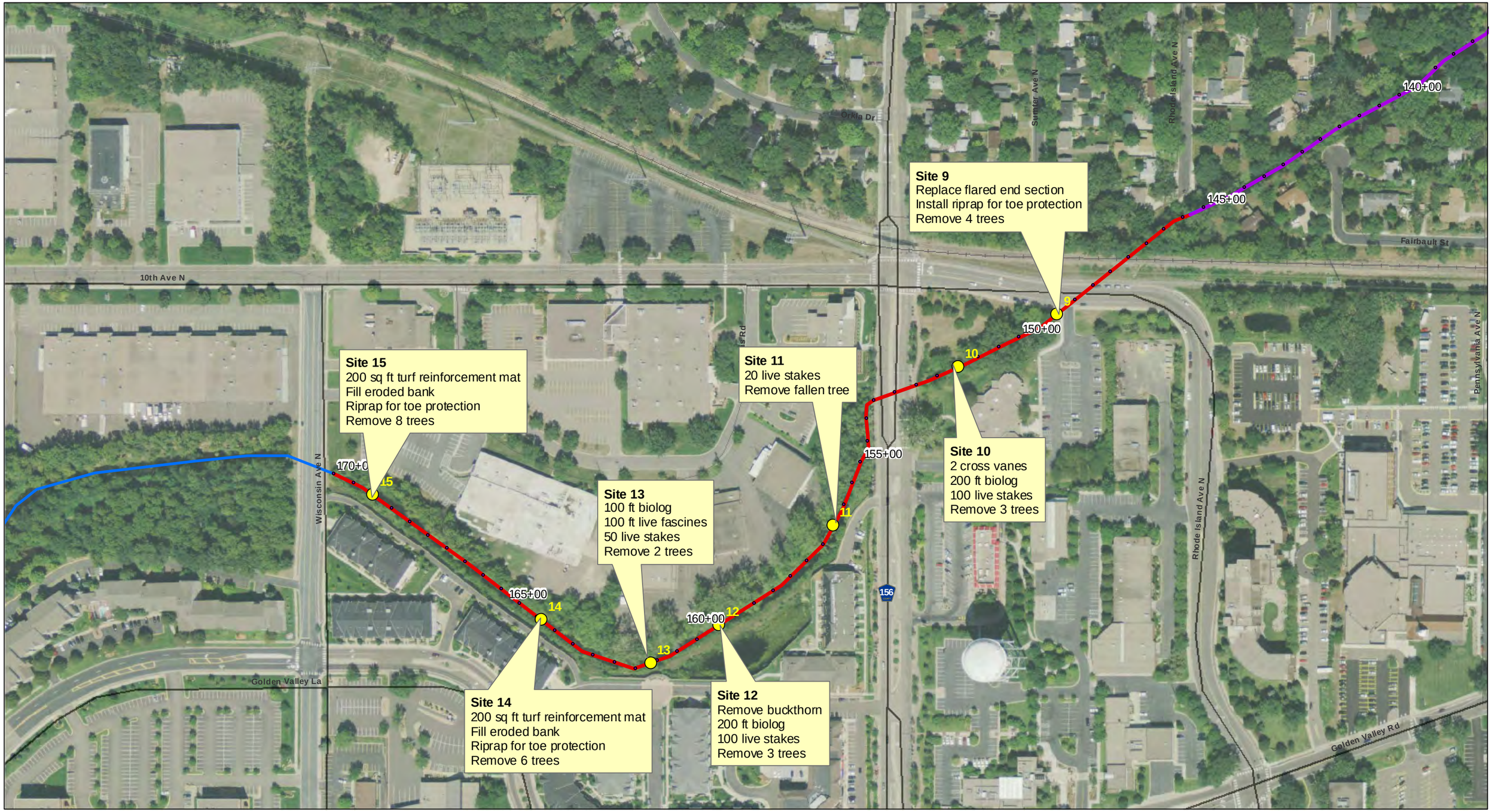
N W E S

Legend

- Study Sites
- Subreach 1
- Subreach 2
- Subreach 3
- Streams

BASSETT CREEK EROSION SITES AND STATIONING FOR SUBREACH 3

Figure 2a
Bassett Creek Restoration Project
Bassett Creek Watershed Management Commission
August 2010



Bassett Creek Watershed Management Commission
www.bassettcreekwmo.org

200 100 0 200 Feet

N W E S

Legend

- Study Sites
- Subreach 1
- Subreach 2
- Subreach 3
- Streams

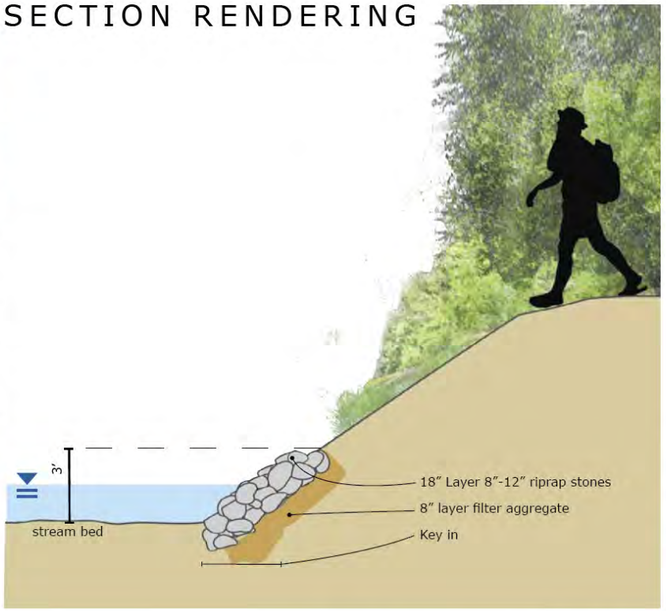
BASSETT CREEK EROSION SITES AND STATIONING FOR SUBREACH 1

Figure 2b
Bassett Creek Restoration Project
Bassett Creek Watershed Management Commission
August 2010

Stream Stabilization Plan

Stone Toe Protection is constructed from cobble-sized rock on the creek edges. It extends to approximately the bankfull level, which will protect the channel banks for flow events that occur every 1 to 2 years or less. The material will extend into the ground to resist scour. Coarse gravel is used to separate the larger rock material from underlying soil. Stone toe protection is typically used in conjunction with revegetation of the upper banks.

SECTION RENDERING



SIMILAR PROJECTS

Stone toe protection has been used extensively in Nine Mile Creek's Lower Valley, in conjunction with deflector dikes, grade control measures and stabilization of large bank failures. Following the 1987 "super storm," the proposed design allowed the stream to continue its course while taking measures to protect areas where water flow was eroding valley walls. The resulting measures have stabilized the stream channel and valley walls while blending seamlessly with the natural environment.

MATERIALS

Materials will consist of cobble-sized material with coarse gravel filter layer to provide separation from the underlying soil. Natural fieldstone material will be used.

EXISTING CONDITIONS

Fluvial bank erosion is caused by water in the stream moving past the streambanks. The shear stress caused by the flow entrains soil particles into the flow, causing the stream bank to erode away. This is the most common type of erosion that occurs in streams. Virtually all streams experience this type of erosion as their flow path evolves over time. However, the rate of fluvial bank erosion can increase when the stream is out of equilibrium with its watershed. Increased flow from a watershed will increase the rate of fluvial bank erosion. In many cases, it appears to be a part of the natural process of stream evolution. In places where the channel is confined by the valley walls, however, fluvial bank erosion can lead to failure of the high banks. It can also undermine storm sewer inlets.

Stone Toe Protection

Bank Protection

BARR

Figure 3

Stream Stabilization Plan

Grade control measures are used where channel downcutting has occurred. Various types of weirs are commonly used to provide grade control on streams, particularly in steeper systems. Weirs can be constructed of sheetpile, concrete, or natural materials such as rock. In most cases, natural rock is used to emulate natural riffles. Large boulders would comprise the core of the structure, with smaller rock material placed on the upstream and downstream sides of the boulders to provide a gradual transition to the channel.

The riffles will serve to raise the surface of the water profile, and will reconnect the stream to its floodplain areas. Following the installation of the riffles, pools will be created upstream of the riffles. However, these pools will fill with sediment over time, which will in effect raise the channel bottom to the desired elevation.

MATERIALS

Materials will consist of various gradations of rock, ranging from large, 3-foot boulders to coarse gravel.

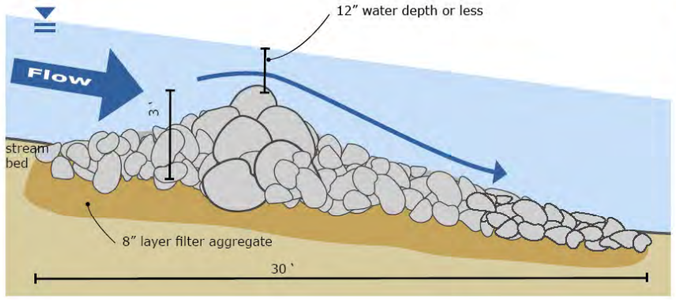
SIMILAR PROJECTS

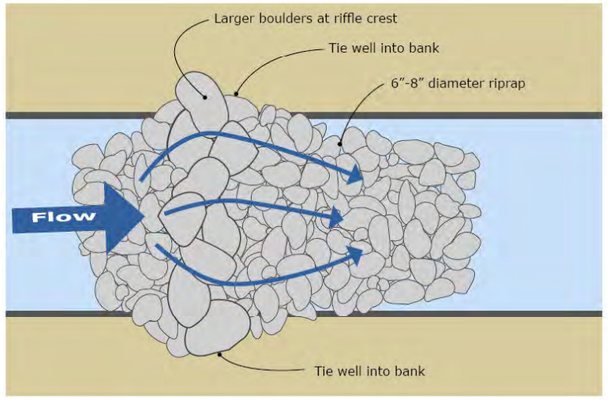
Following the 1987 "super storm," a rapids was constructed on Nine Mile Creek downstream of the 106th Street Bridge. The rapids was one of several grade-control structures that were installed on a three-mile stretch of creek in the lower valley. The proposal allowed the stream to continue its course while taking measures to protect areas where water flow was eroding valley walls. Protection measures included applying porous deflector dikes, burying sheetpile walls parallel to the creek to prevent undercutting of slopes, installing weirs (rock or capped sheetpile) to limit stream-bed degradation, and improving storm-sewer outlets.

EXISTING CONDITIONS

Channel incision occurs when there is an imbalance between the sediment supply and the sediment carrying capacity of the stream. Erosion will occur when the sediment carrying capacity of a stream exceeds the sediment supply. In streams with cohesive banks and steep channel slope, the erosion will first occur primarily on the channel bottom because that is where the erosive forces are the strongest. As the channel deepens, the stream will gradually become wider as the banks eventually fail. The stream will gradually return to equilibrium; however, the process can take many years and significant amounts of erosion will occur during the process.

SECTION/PLAN RENDERING





Constructed Riffle

Grade Control

BARR

Figure 4

Stream Stabilization Plan

Rock vanes are constructed from boulders on the creek bottom. They function by diverting channel flow toward the center and away from the bank. They are typically oriented in the upstream direction and occupy no more than one third of the channel width. Vanes are largely submerged and inconspicuous. The rocks are chosen such that they will be large enough to resist movement during flood flows or by vandalism, with additional smaller rock material to add stability. Rock vanes function in much the same way as root wads in that they push the stream thalweg (zone of highest velocity) away from the outside bend. They also promote sedimentation behind the vane, which adds to the toe protection.

Vanes can also be constructed from both banks, forming an upstream-pointing "V." In this configuration, the vane protects both banks and also provides grade control.

MATERIALS

Materials will consist of various gradations of rock, ranging from large, 3-foot boulders to coarse gravel.

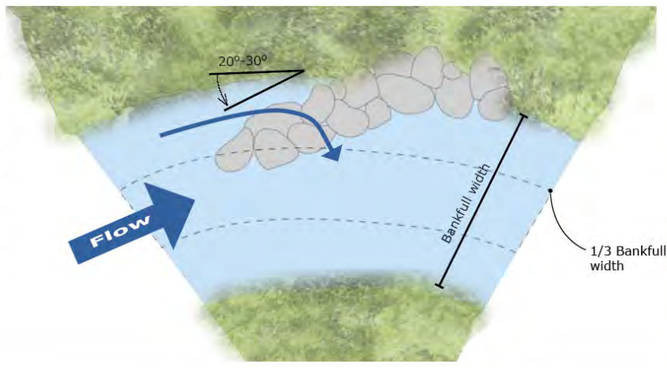
SIMILAR PROJECTS

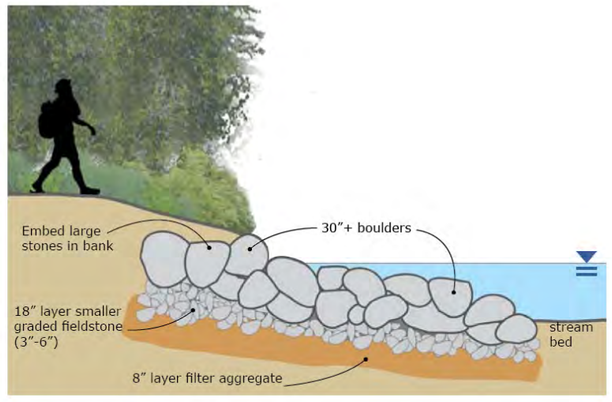
Here is an example of a stabilization project designed for a 1,000-foot long, 20-foot high streambank that was severely eroded. The channel was directed away from the bank toe by installing six rock vanes. The bank was planted with native vegetation and protected with erosion control blanket, while the terrace above the bank was graded to redirect surface runoff to a less vulnerable area. The restored streambank withstood significant flooding during 2001, and has become nicely vegetated (see picture above).

EXISTING CONDITIONS

Fluvial bank erosion is caused by water in the stream moving past the streambanks. The shear stress caused by the flow entrains soil particles into the flow, causing the stream bank to erode away. This is the most common type of erosion that occurs in streams. Virtually all streams experience this type of erosion as their flow path evolves over time. However, the rate of fluvial bank erosion can increase when the stream is out of equilibrium with its watershed. Increased flow from a watershed will increase the rate of fluvial bank erosion. In places where the channel is confined by the valley walls, however, fluvial bank erosion can lead to failure of the high banks. It can also undermine storm sewer inlets.

PLAN/SECTION RENDERING





Rock Vanes

Bank Protection

BARR

Figure 5

Stream Stabilization Plan

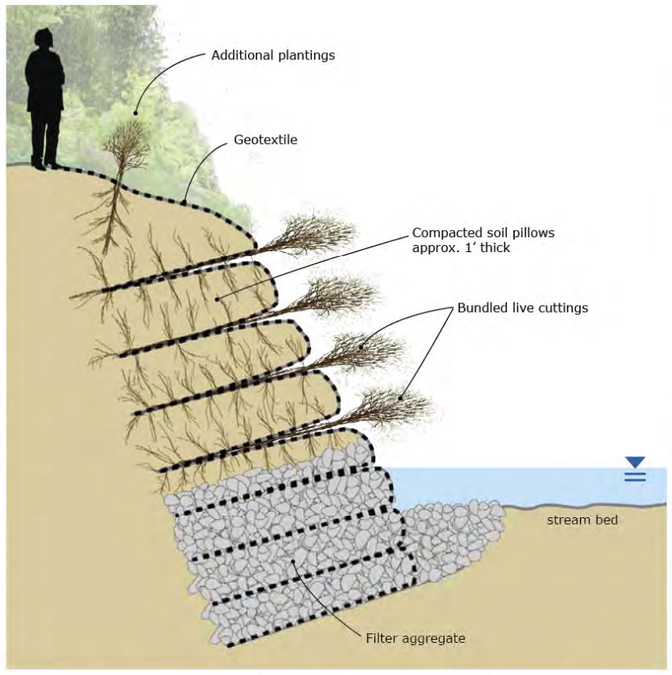
EXISTING CONDITIONS

Fluvial bank erosion is caused by water in the stream moving past the streambanks. The shear stress caused by the flow entrains soil particles into the flow, causing the stream bank to erode away. This is the most common type of erosion that occurs in streams.

Virtually all streams experience this type of erosion as their flow path evolves over time. However, the rate of fluvial bank erosion can increase when the stream is out of equilibrium with its watershed. Increased flow from a watershed will increase the rate of fluvial bank erosion.

Soil Pillows are utilized in a bioengineering method known as Vegetated Reinforced Slope Stabilization (VRSS). The method combines rock, geosynthetics, soil and plants to stabilize steep, eroding slopes in a structurally sound manner. VRSS typically involves protecting layers of soils with a blanket or geotextile material (e.g. erosion control blanket) and vegetating the slope by either planting selected species (often willow or dogwood species) between the soil layers or by seeding the soil with desired species before it is covered by the protective material. In either case, with adequate light and moisture, the vegetation grows quickly and provides significant root structure to strengthen the bank. This method tends to be labor intensive and, therefore, relatively expensive.

SECTION RENDERING



In places where the channel is confined by the steep valley walls, however, fluvial bank erosion can lead to failure of the high banks. It can also undermine storm sewer inlets.

For sites where groundwater seepage is a problem and where it is desirable to maintain steep banks, soil pillows are a feasible solution.

SIMILAR PROJECTS

The Mill Creek Restoration Project utilized soil bioengineering design to stabilize 175 linear feet of severely eroding streambanks within the Caldwell Recreation Park in southeastern Ohio. The work included two 25-foot vegetated reinforced soil slope (VRSS) sections, two 50-foot fill bank sections protected with woven coir and direct woody plantings, and a 12.5-foot tie-in on the upstream and downstream end of streambank work area.

MATERIALS

Materials consist of graded rock for the lower layers of the structure and for internal drainage, if necessary. Geotextile fabric is used to wrap the soil. Plants, such as willow or dogwood, or seed mixture is used for planting in and between the soil pillows.

Soil Pillows

Bank Protection

BARR

Figure 6

Stream Stabilization Plan

Culvert Stabilization is somewhat unique to each situation, depending on the site circumstances. Most sites require additional rock placement with a granular filter layer (rather than filter fabric). Some cases may require re-alignment and/or lowering of the outlet to better align with the stream channel. Typically, outlets should be aligned in the downstream channel direction so that flow doesn't impinge on the opposite bank. It is usually desireable for the culvert to enter the stream at or just above the normal water level in order to minimze the potential for undercutting.

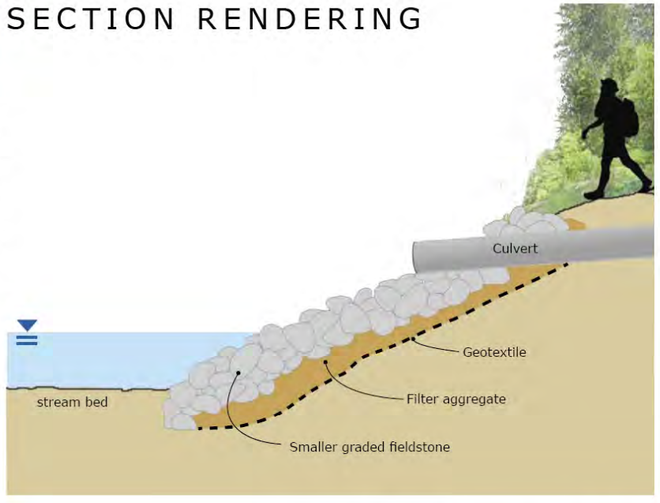
SIMILAR PROJECTS

There are many culvert stabilization designs used on various streams and rivers. Because they are often small projects, the work is often performed by local municipalities or completed as part of a larger project.

EXISTING CONDITIONS

Erosion is frequently observed at culvert outlets for a variety of reasons, including insufficient erosion protection at the culvert outlet, streambank erosion, and channel downcutting, which leaves the culvert perched above the channel. Filter fabric is often used at culvert outlets to separate riprap protection from underlying soils, however the fabric provides a slippery surface for the riprap, which commonly slides into the channel.

SECTION RENDERING



MATERIALS

Materials consist of rock materials ranging from graded riprap (either fieldstone, or, for steep slopes, angular) and granular filter material (typically coarse gravel). If necessary, additional pipe, manholes and end sections may be necessary.

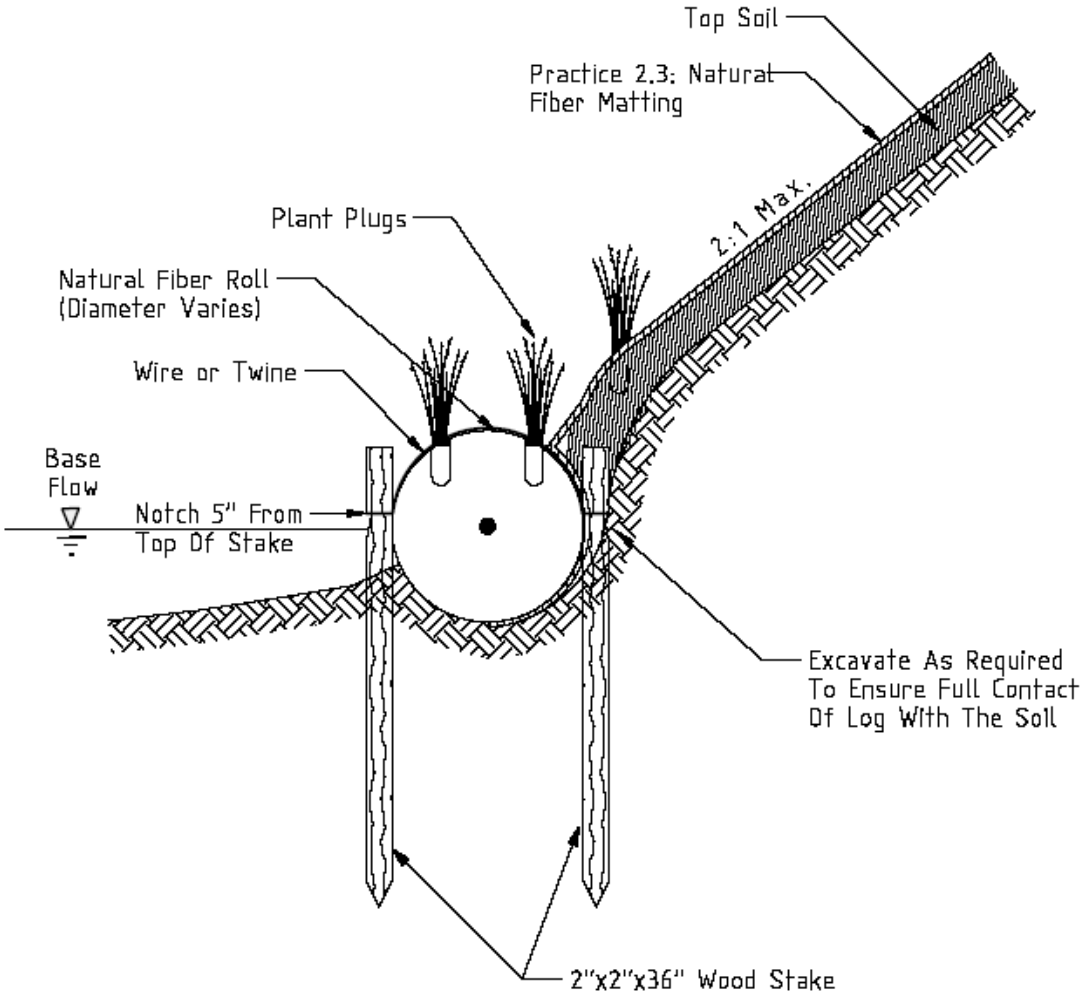


Culvert Stabilization

Bank Protection

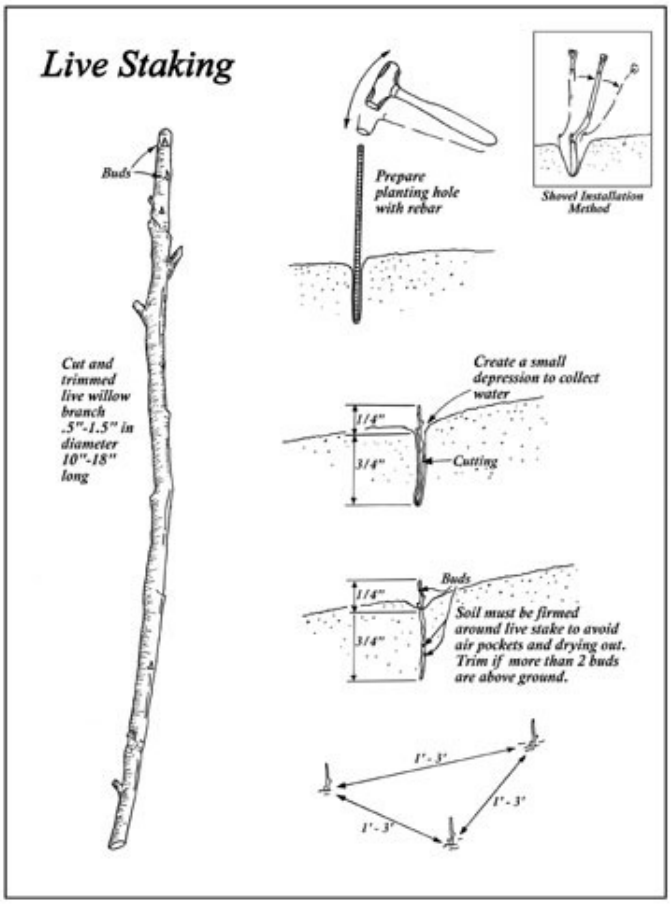
BARR

Figure 7



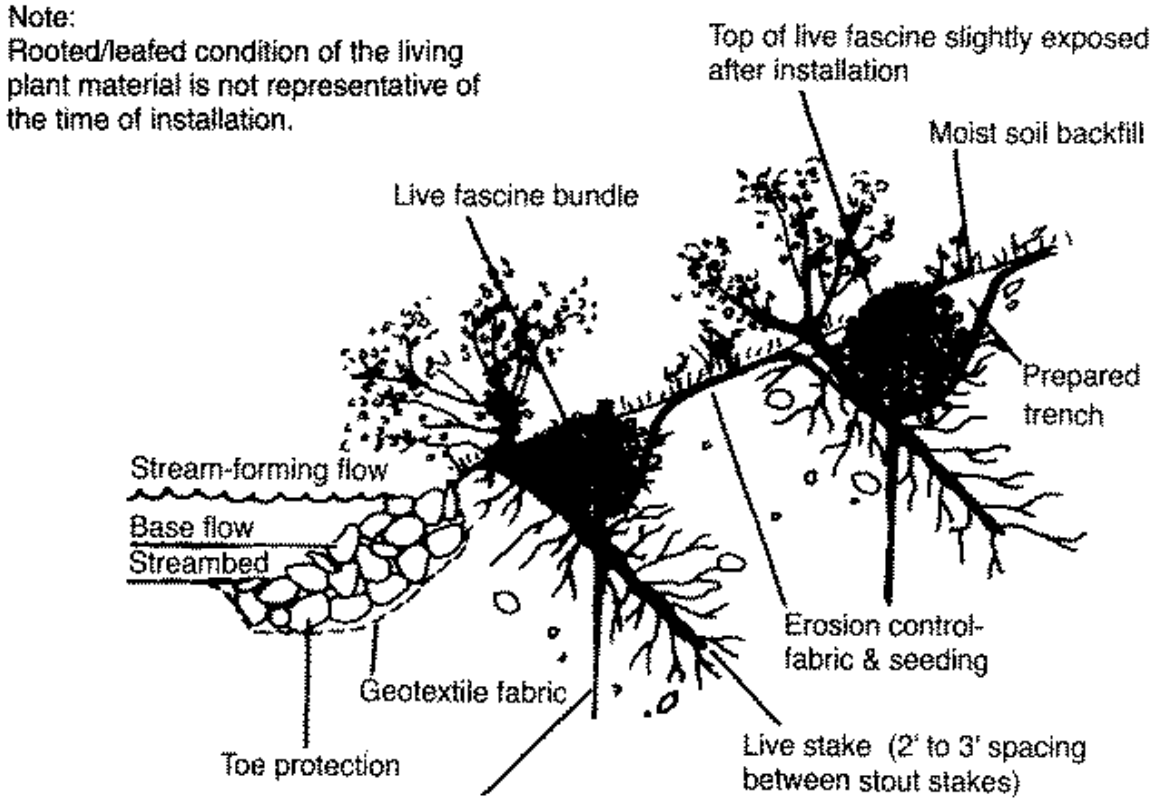
Source:
The Virginia Stream Restoration & Stabilization Best Management Practices Guide

Figure 8
Biolog Bank Protection
Bassett Creek Reach 1 Restoration Project
Bassett Creek Watershed Management Commission



Source: http://www.sf.adfg.state.ak.us/SARR/restoration/techniques/livestake.cfm

Figure 9
Live Stakes for Bank Protection
Bassett Creek Reach 1 Restoration Project
Bassett Creek Watershed Management Commission



Source: http://www.dnr.state.oh.us/water/pubs/fs_st/stfs14/tabid/4169/Default.aspx

Figure 10
Live Fascines for Bank Protection
Bassett Creek Reach 1Restoration Project
Bassett Creek Watershed Management Commission

Appendices

Appendix A

2010 Site Photos

Photo 1. *Site 1*. Minor to moderate erosion near the Golden Valley-Crystal border

Photo 2. *Site 1*. Minor to moderate erosion near the Golden Valley-Crystal border.

Photo 3. *Site 2*. Severely eroding bank.

Photo 4. *Site 2*. Severely eroding bank

Photo 5. *Site 3*. Minor bank erosion on an outside bank of a meander.

Photo 6. *Site 4*. Moderate to severe erosion.

Photo 7. *Site 4*. Moderate erosion.

Photo 8. *Site 5*. Moderate erosion.

Photo 9. *Site 5.* Moderate erosion.

Photo 10. *Site 6*. Minor bank erosion.

Photo 11. *Site 7.* Severe bank erosion with a new channel being cut through floodplain.

Photo 12. *Site 7.* Downstream end of new channel being cut.

Photo 13. *Site 8*. Minor bank erosion on an outside bank of a meander.

Photo 14. *Site 9*. Erosion around flared end section.

Photo 15. *Site 10.* Minor bank erosion with undercut trees.

Photo 16. *Site 10.* Minor bank erosion with undercut trees.

Photo 17. *Site 11.* Fallen tree.

Photo 18. *Site 11.* Minor bank erosion directly across from fallen tree.

Photo 19. *Site 12.* Minor bank erosion with severe buckthorn problem.

Photo 20. *Site 13.* Moderate bank erosion.

Photo 21. *Site 14.* Moderate bank erosion from concentrated parking lot runoff.

Photo 22. *Site 15.* Moderate bank erosion from concentrated parking lot runoff.

Appendix B

Wetland Delineation

Main Stem Bassett Creek Wetland Delineation Report for the Bassett Creek Feasibility Study

Bassett Creek Stream Restoration Project City of Golden Valley, MN

Prepared for
Bassett Creek Watershed Management Commission

August 2010

BARR

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Main Stem Bassett Creek
Wetland Delineation Report
Bassett Creek Feasibility Study
Bassett Creek Watershed Management Commission
City of Golden Valley, MN
August, 2010

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1.0 Introduction

Barr Engineering Company (Barr) has completed the delineation and mapping of wetlands within two subreaches in the Main Stem of Bassett Creek (Main Stem) study area in accordance with the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (1987 Edition) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (2008). The study area is located within Sections 28, 31 and 32, Township 118N, Range 21W, in the City of Golden Valley, in Hennepin County, Minnesota. A location map is provided in Figure B-1. The extent of delineation and mapping includes two subreaches of the Main Stem. The first subreach (Subreach 1) is a ±2,100 foot long stretch which flows in a generally east-northeasterly direction and is bounded to the west by Wisconsin Avenue and to the east by Rhode Island Avenue. The second subreach (Subreach 3) is a ±4,200 foot long (0.8 mile) stretch which flows in a generally northerly direction and is bounded to the south by Duluth Street and to the north by the Golden Valley/Crystal city limit. Figures B-2a and B-2b provide aerial photography that covers both subreaches (study area). Barr Engineering identified and delineated four hydrologically-connected wetlands onsite. Details of the delineation methodology and wetland descriptions are reflected in later sections of this report.

Section 404 Permit

The proposed Bassett Creek Stream Restoration Project will require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE). Under Section 404 of the Clean Water Act (CWA), the COE regulates the placement of fill into wetlands, if the wetlands are hydrologically linked to a water of the United States. The Main Stem of Bassett Creek is directly connected to the Mississippi River, a water of the United States. Additionally, the MPCA will likely be involved in any wetland mitigation requirements as part of the CWA Section 401 water quality certification process for the 404 Permit.

Minnesota Wetland Conservation Act

The Wetland Conservation Act (WCA) regulates the filling and draining of wetlands and excavation within Type 3, 4, and 5 wetlands. In addition, the WCA may regulate all types of wetland alteration if any wetland fill is proposed. The WCA is administered by local government units (LGU), which include: cities, counties, watershed management organizations, soil and water conservation districts, and townships. Golden Valley is the LGU for the proposed project site. The Minnesota Board of Water and Soil Resources (BWSR) oversees administration of the WCA statewide.

2.0 General Environmental Setting

The following sections describes mapped and documented data on the Main Stem Bassett Creek study area, including hydrology, available land cover data, and mapped soil units, and mapped wetland community information.

2.1 Hydrology

The Main Stem is one of several branches of Bassett Creek which make up the ±25,000 acre Bassett Creek Watershed. The Main Stem, upstream from its confluence with North Branch, is a small, winding, shallow stream located in a suburban-urban setting and drains portions of the cities of St. Louis Park, Plymouth, Crystal, New Hope, and Golden Valley. It begins in the City of Plymouth at Medicine Lake and flows in a general northeasterly direction before connecting with the southeast-flowing North Branch of Bassett Creek just upstream of Highway 100. From there, Bassett Creek flows southeast towards the City of Minneapolis where it discharges into the Mississippi River.

For Subreach 1, the topography at Wisconsin Avenue is 884 feet above mean sea level (AMSL). The elevation decreases to 880 feet (AMSL) at the point of crossing Rhode Island Avenue. For Subreach 3, the topography at Duluth Street is 856 feet AMSL. The elevation decreases to 844 feet (AMSL) at the point of crossing the Golden Valley/Crystal city limit. A 2-foot contour topographic map and USGS Quadrangle map are included as Figures B-3a, B-3b, and B-4, respectively.

2.2 Land Use/Land Cover

Subreach 1 occurs in an area of high-density industrial and commercial development with a high percentage of imperious surface. Subreach 3 occurs in medium and high-density single-family residential areas of Golden Valley. Other land uses surrounding Subreach 3 include business commercial and paved community trails. The stream crosses numerous residential streets and county highways and is typically abutted by the backyards of residential housing. In Subreach 3, a forested vegetation buffer is in place, but in Subreach 1, development tightly abuts the stream edge, providing little vegetative buffer. Available land cover data is presented in Figure B-5. Representative photographs of the land cover around the subreaches are attached in Appendix B-1.

2.3 Soils

According to the United States Department of Agriculture Natural Resources Conservation Service Soil Data Mart for Hennepin County, there are three major soil classifications that occur within the study area, which are depicted in Figure B-6 and are described below.

U1A - URBAN LAND-UDORTHENTS, WET SUBSTRATUM, COMPLEX, 0 TO 2 PERCENT SLOPES

Component: Urban land (80%)

The Urban land component is mainly commercial, industrial or residental areas with 65 to 100 percent of the map unit covered by impervious surfaces. The majority of the area was originally occupied by wet depressional soils, mineral or organic.

Component: Udorthents, wet substratum (20%)

The Udorthents, wet substratum component is comprised of fill material placed in wet depressional areas to match the adjoining upland landscape. Because of the variability of the components in this map unit, interpretations for specific uses are not available and onsite investigation is needed.

L6A - BISCAY LOAM, 0 TO 2 PERCENT SLOPES

The Biscay component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on swales. The parent material consists of outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during April. Organic matter content in the surface horizon is about 6 percent. This soil meets hydric criteria.

L30A - MEDO SOILS, DEPRESSIONAL, 0 TO 1 PERCENT SLOPES

Slopes are 0 to 1 percent. This component is on depressions on outwash plains. The parent material consists of organic material over outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during April, May, June. Organic matter content in the surface horizon is 65-70 percent. This soil meets hydric criteria.

2.4 National Wetlands Inventory

United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) database was consulted for the presence of wetlands within the study area. According to NWI data, which was mapped in the 1980s in the State of Minnesota, two wetlands occur within the study area, including forested and shallow marsh wetlands. The mapped NWI wetlands align somewhat with actual site conditions, but generally over-estimate actual wetland extent in Subreach 1 and under-estimate wetland extent in Subreach 3. Below are the descriptions for the Cowardin (1979) classification codes, as shown in Figure B-7.

PFO1C - Palustrine forested, broad-leaved deciduous, seasonally flooded

PUBF - Palustrine, unconsolidated bottom, semi-permanently flooded

2.5 Public Waters Inventory

The DNR Public Waters Inventory (PWI, a.k.a. Protected Waters Inventory) database was consulted for the presence of wetlands or other surface waters in or near the study area receiving statutory protection. Subreach 1 of Main Stem of Bassett Creek is considered a PWI Altered-Natural Watercourse. Subreach 3 is considered a PWI Natural Watercourse (Figure B-7).

3.0 Wetland Delineation

3.1 Wetland Delineation and Classification Methods

This assessment was designed to evaluate the ecological conditions and characteristics of the study area to identify wetlands and other surface waters that may be claimed as jurisdictional by federal and/or state agencies. The study area included all areas 75 feet from both sides of the stream centerline. All wetlands and surface waters wholly or partially within this study area were delineated. Wetlands that entirely occur outside of the study area were not delineated.

Before field investigations, desk-top preliminary data was collected and reviewed. National Wetlands Inventory mapping is a useful off-site tool in identifying the possible presence of wetlands. Other data available included aerial photography, topographical data, and soils data. Field investigations were conducted on July 8 and August 9, 2010 by Barr to identify and delineate jurisdictional wetland boundaries on the property.

The delineation was conducted according to the Routine On-Site Determination Method specified in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (1987 Edition) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (2008). The two subreaches in the study area were traversed on foot and field delineated.

In determining the jurisdictional wetland boundaries, the three jurisdictional wetland qualifiers, wetland hydrology, hydrophytic vegetation, and hydric soils were examined as evidence of wetland presence or absence. Wetlands and adjacent upland data on hydrology, vegetation, and soils were recorded in *Wetland Determination Data Form – Midwest Region* data sheets, which are included in Appendix B-2. Because the wetlands are relatively homogeneous, data points were completed for only a few representative wetlands. The wetland boundaries were recorded using a Trimble Global Positioning System with sub-meter accuracy. The wetland boundaries were then mapped using ArcMap 9.0 Geographic Information System software. Photo documentation of typical wetlands encountered along the Main Stem subreaches is provided in Appendix B-1.

Soil profiles were excavated with the use of a Dutch auger, typically up to a depth of 18-20 inches below the ground surface or when definitive hydric soil indicators were encountered. The soil sample points reported in Appendix B-2 were located close to the water-ward extent of the wetland line, for the wetland data point, and close to the land-ward extent of the wetland line for the upland data point.

The soil profiles from each boring were examined for hydric soil indicators according to the *Pocket Guide to Hydric Soil Field Indicators* (Wetland Training Institute 2004). Soil colors were determined with the aid of a Munsell® soil color chart. Soil textures were determined by feel. The hydrologic conditions within the immediate vicinity of each soil boring were documented.

Vegetative plots were established for herbaceous layers, and when possible, in a nested fashion with shrub and tree layers, within each wetland and adjacent upland data point. The plant species at each sample location were identified and their wetland indicator status (for Region 3) was noted (Reed 1988; USDA 2010). Efforts were made to meet the Army Corps Delineation Manual plot size requirements for each stratum, but due to wetland shape and size and steep site topography, rectangular plots were often created, but still covered a suitable percentage of wetland area. Dominant species were determined by use of the 50/20 rule.

The delineated wetlands habitat types were classified using the U.S. Fish and Wildlife Service Circular 39 System (U.S. Fish and Wildlife 1956) and the U.S. Fish and Wildlife Service Cowardin System (Cowardin *et al*. 1979).

3.2 Delineation Results

With few exceptions, the Bassett Creek Main Stem study area is abutted by riparian wetlands. The wetlands contiguous to, and which include, the Main Stem stream channel are, in most cases, floodplain forested wetlands, best described as Type 1 "Seasonally flooded basins or flats" under the Circular 39 System or PFO1A "palustrine forested, broad-leaved deciduous, temporarily flooded" under the Cowardin System. The individual wetland polygons are an artificial product of one contiguous wetland system becoming separated by roadways. These wetlands remain hydrologically connected by large under-road culverts. The four wetlands encountered and delineated in the two subreaches total ±8.84 acres; ±1.18 acres of wetlands occur in Subreach 1 and ±7.66 acres of wetlands occur in Subreach 3. In addition, two stormwater ponds were encountered and delineated. SW-1 is located adjacent to Wetland A and totals ±0.54 acres, and SW-2 is located adjacent to Wetland C and totals ±0.03 acres. Although all wetlands in the study area occur in conjunction with the Main Stem, hydrologic indicators were not always encountered, even close to the stream channel. However, in most cases, secondary hydrologic indicators were present, such as floodplain geomorphic setting and the FAC-neutral test. The wetland delineation results are presented in Figures 8 through 10.

The following sections describe each wetland in additional detail.

3.2.1 Wetland A (Subreach 1)

Wetland A totals ±1.16 acres (Figure B-8). It is surrounded by urban development including apartment buildings, office buildings, and light industrial development. The topography is typically steep. The top of bank ranges from 12-15 feet from toe of slope, with a slope of 45 degrees or steeper. Typically, there is a 2 foot high or higher nearly-vertical drop off from the bank to the water. In some areas, the bank contains a narrow, nearly level terrace.

An upland only data point was recorded in Wetland A (SB-11 in Appendix B-2), as shown on Figure B-8. A corresponding wetland data point was not recorded because the steep topography of the bank in subreach 1 creates upland conditions nearly to the water's edge. A narrow 1-2 foot wide strip of unvegetated mudflat often fringes the open water channel, which without further investigation, meets the definition of wetland. Wetland A is very nearly comprised only of the stream channel itself and the narrow strips of abutting mudflats, where they occur. Little to no floodplain riparian forest abuts the channel. The uplands surrounding the wetland are highly dominated by common buckthorn, but can also consist of wetland species (FAC or wetter) at the upland/wetland line, including box elder, eastern cottonwood and black willow; however, no hydric soils were found, and evidence of hydrology is absent. During flood events, it is reasonable to believe that the stream banks inundate, but not of a duration sufficient to develop wetland characteristics. The upland data point was located in a strip of nearly level terrace as described above. The ground cover was dominated with buckthorn seedlings. Soils are uniformly 10YR 4/2 in color to a depth of at least 20 inches, and are silty clay in texture; no redoximorphic or other hydric soil indicators were observed. No primary hydrologic indicators were noted, though one secondary indicator, "geomorphic position" could arguably be met.

3.2.2 Wetland B (Subreach 1)

Wetland B is a small (±0.02 acre) segment of the Main Stem, surrounded by roads, public library, and parking lot (Figure B-8). Like Wetland A, the topography is relatively steep, and transitions from upland to wetland at the waterline. The vegetation is as described above for Wetland A.

3.2.3 Wetland C (Subreach 3)

Wetland C is a long and winding, unbroken stretch of riparian floodplain forest, totaling ±3.31 acres. In the middle of this stretch of Main Stem, the stream diverges around a small island. This subreach is surrounded by single-family residential housing to the west and commercial development to the east, occurring at abrupt higher topography than the wetland and stream channel. A community bike trail follows the stream on the easterly side. The vegetative buffer here is wider than other areas of

the Main Stem outside of the study area. The one mapped NWI wetland refers to a constructed backyard pond that connects to the stream channel.

Box elder is the most common species in the canopy. Large eastern cottonwood trees are also common and scattered throughout. Other typical canopy species include American elm, silver maple, and green ash. In the shrub layer, buckthorn can be problematic, often occurring in high densities. Other shrubby vegetation largely consists of young forest canopy species listed above, along with occasional red-osier dogwood, black willow, sumac, mulberry, and elderberry. The ground cover under dense forest canopy is often dominated by jewelweed, stinging nettle, American horehound, and Virginia creeper. In more open areas, the ground cover consists of reed canary grass, garlic mustard, bird's foot trefoil, giant goldenrod, and Canada goldenrod.

Wetland and upland data points were recorded in Wetland C (SB-7 and SB-8 in Appendix B-2), as shown on Figure B-9. Wetland C is a seasonally flooded riparian forest (Type 1; PFOA), dominated by box elder trees and common buckthorn shrubs. At the data point, the ground cover was dominated with jewelweed. Soils are 10YR 2/1 in color to a depth of 18 inches, with 25% redoximorphic features from 8-18 inches; loamy sand in texture; and meets the Sandy Redox hydric soil criteria. Wetland C met the "saturated" primary hydrologic indicators.

3.2.4 Wetland D (Subreach 3)

Wetland D is also a long and winding, unbroken stretch of riparian floodplain forest, totaling ±4.35 acres (Figure B-10). This subreach is surrounded by single-family residential housing along both sides of the channel, often occurring at abrupt higher topography. A community bike trail follows the stream on the easterly side. Vegetation in Wetland D is the same as described above for Wetland C.

4.0 MNRAM Assessment

The Minnesota Routine Assessment Method (MnRAM 3.0) is a comprehensive ranking system designed to help qualitatively assess functions and values associated with Minnesota wetlands for the purpose of managing local wetland resources. Full methodology guidance is available online (BWSR 2009). Some of the criteria evaluated and numerically ranked include vegetative diversity, water quality, fish and wildlife habitat, recreational value, and restoration potential. Functions are ranked from .001 to 1.0, signifying low to high values. When a wetland function has exceptional quality, it is given a score of 2.0.

While performing MNRAM assessments, wetlands in the study area were grouped and assessed together according to proximity and similarity in habitat and community type. In MNRAM, each assessment is given a unique "wetland name" created from the section, township, and range the assessment occurred in, followed by the sequential number of the assessment. Below are the wetland names noted in the MNRAM assessment summary sheets and the wetlands that were grouped together for each assessment.

27-118-21-31-001: Wetlands A and B

27-118-21-28-001: Wetlands C and D

The MNRAM summary sheets are presented in Appendix B-3. In general, the wetlands scored relatively low. This is mainly due to the urbanized setting, limited upland buffer, nuisance and exotic species, and problems inherent to the stream itself such as stream bank erosion and degraded water quality from stormwater drainage.

5.0 Summary

The wetlands associated with two subreaches in the Main Stem of Bassett Creek were delineated in accordance to the COE Wetland Delineation Manual and Midwest Regional Supplement. Four wetlands totaling approximately 8.84 acres were identified and field delineated. Wetlands A and B are primarily limited to the extent of Main Stem stream channel and are surrounded by steep upland banks. Wetlands B and C consist of the stream channel and bordering floodplain forest riparian wetlands. These wetlands are hydrologically connected via culverts, but are geographically separated by roads. In addition, MNRAM functional wetland assessments were also performed. The wetlands generally scored low in most environmental criteria.

6.0 References

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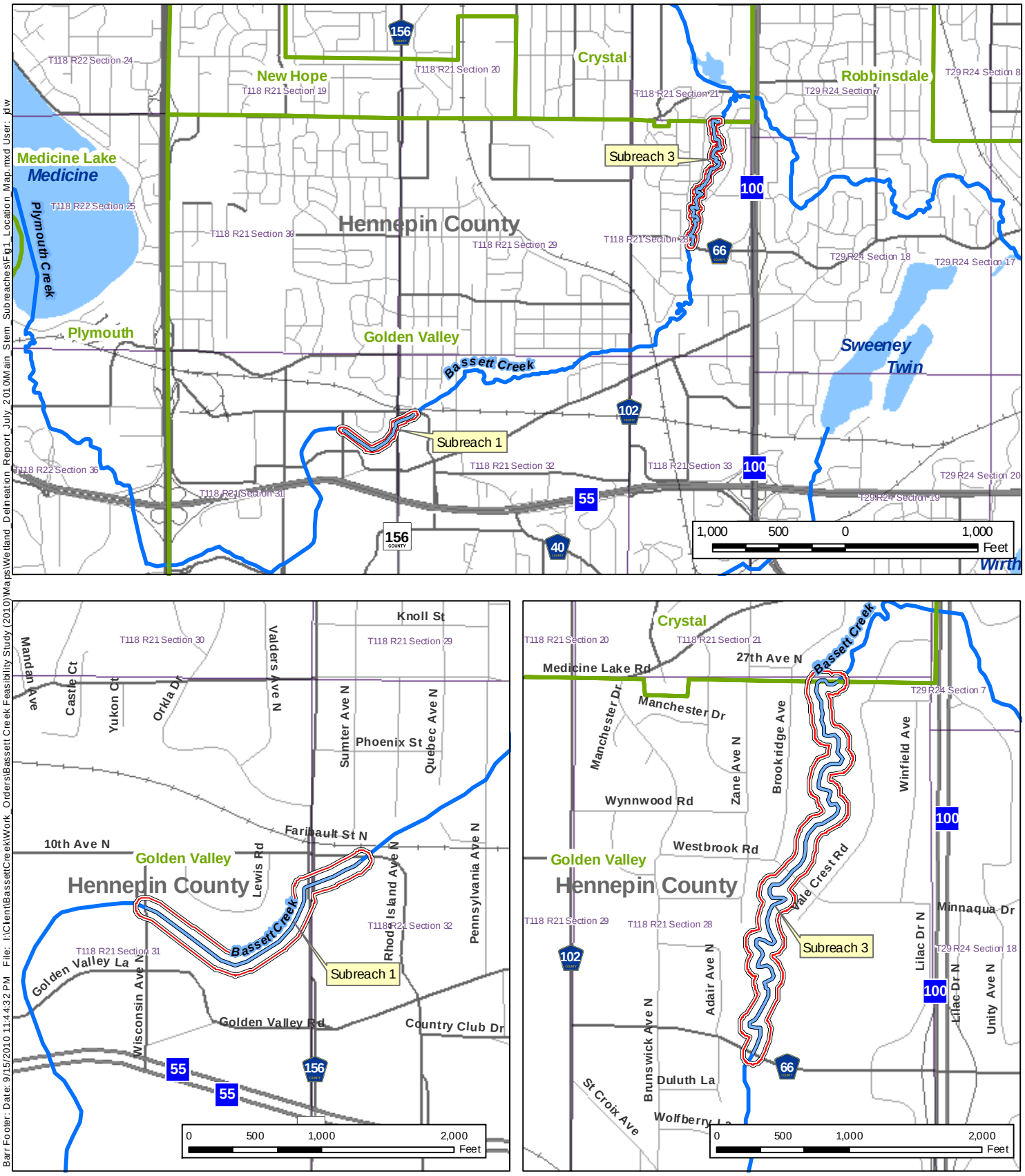
Figures



MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-1
LOCATION MAP
Bassett Creek Watershed
Management Commission
August 2010

BARR

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Subreach 1

Main Stem Study Area

Creek Channels

N

W E

S

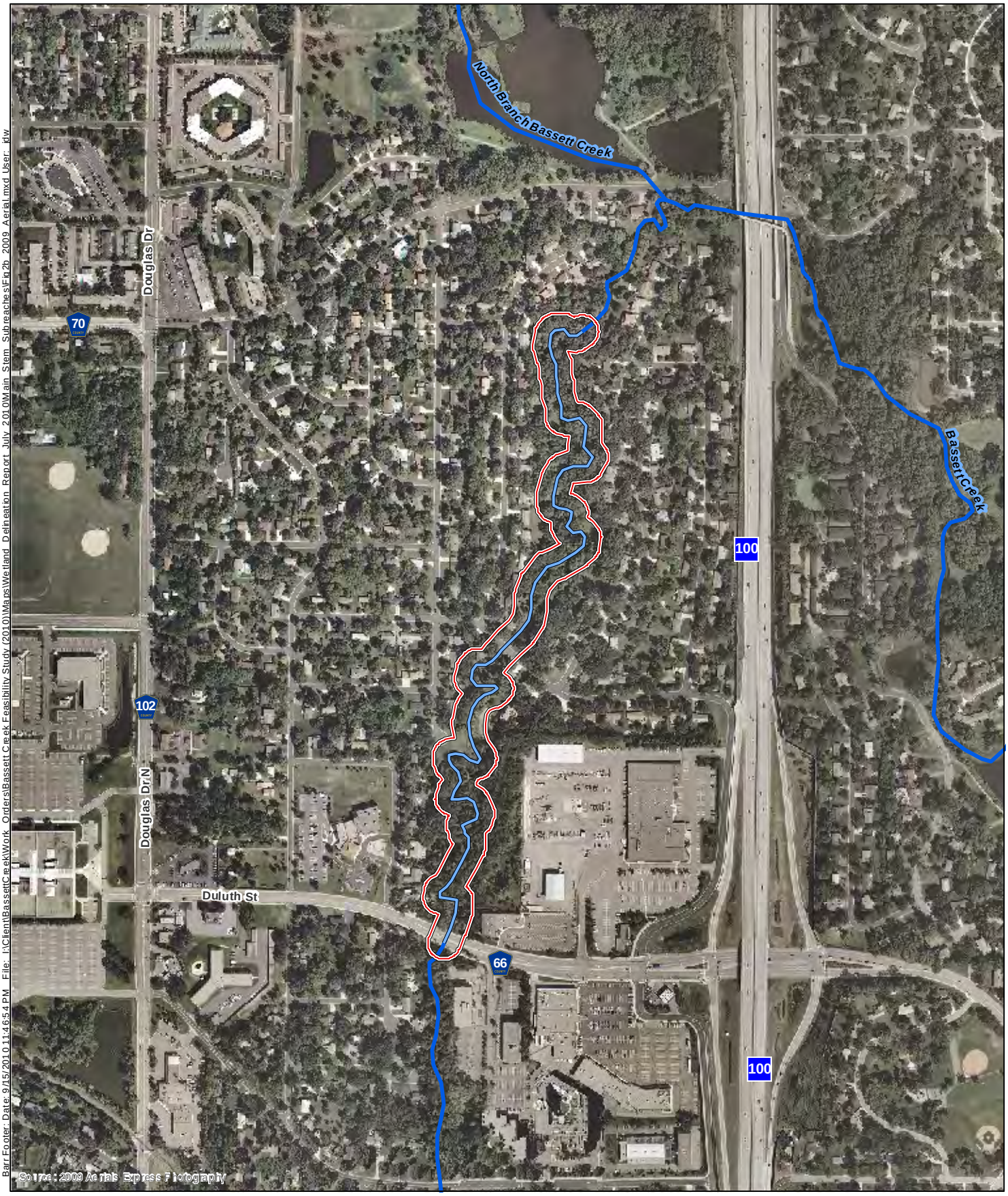
600 300 0 600

Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-2a
2009 AERIAL PHOTO
Subreach 1
Bassett Creek Watershed
Management Commission
August 2010

BARR



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Subreach 3
Main Stem Study Area
Creek Channels

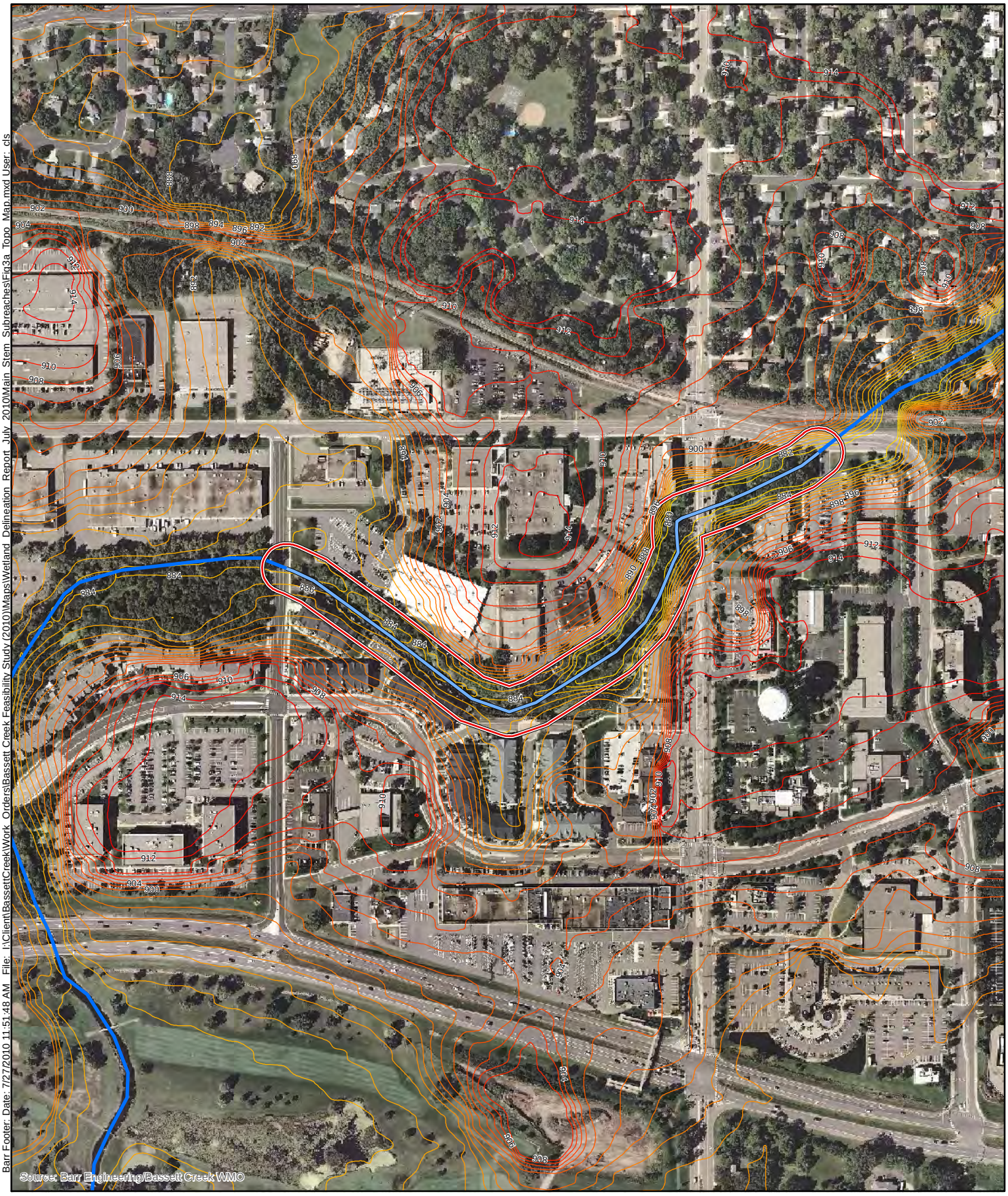
N
W E
S

600 300 0 600
Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-2b
2009 AERIAL PHOTO
Subreach 3
Bassett Creek Watershed
Management Commission
August 2010

BARR



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Subreach 1

Main Stem Study Area

Creek Channels

N

W E

S

400 200 0 400

Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-3a
TOPOGRAPHIC MAP
Subreach 1
Bassett Creek Watershed
Management Commission
August 2010

BARR

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Subreach 3

Main Stem Study Area

Creek Channels

N

W E

S

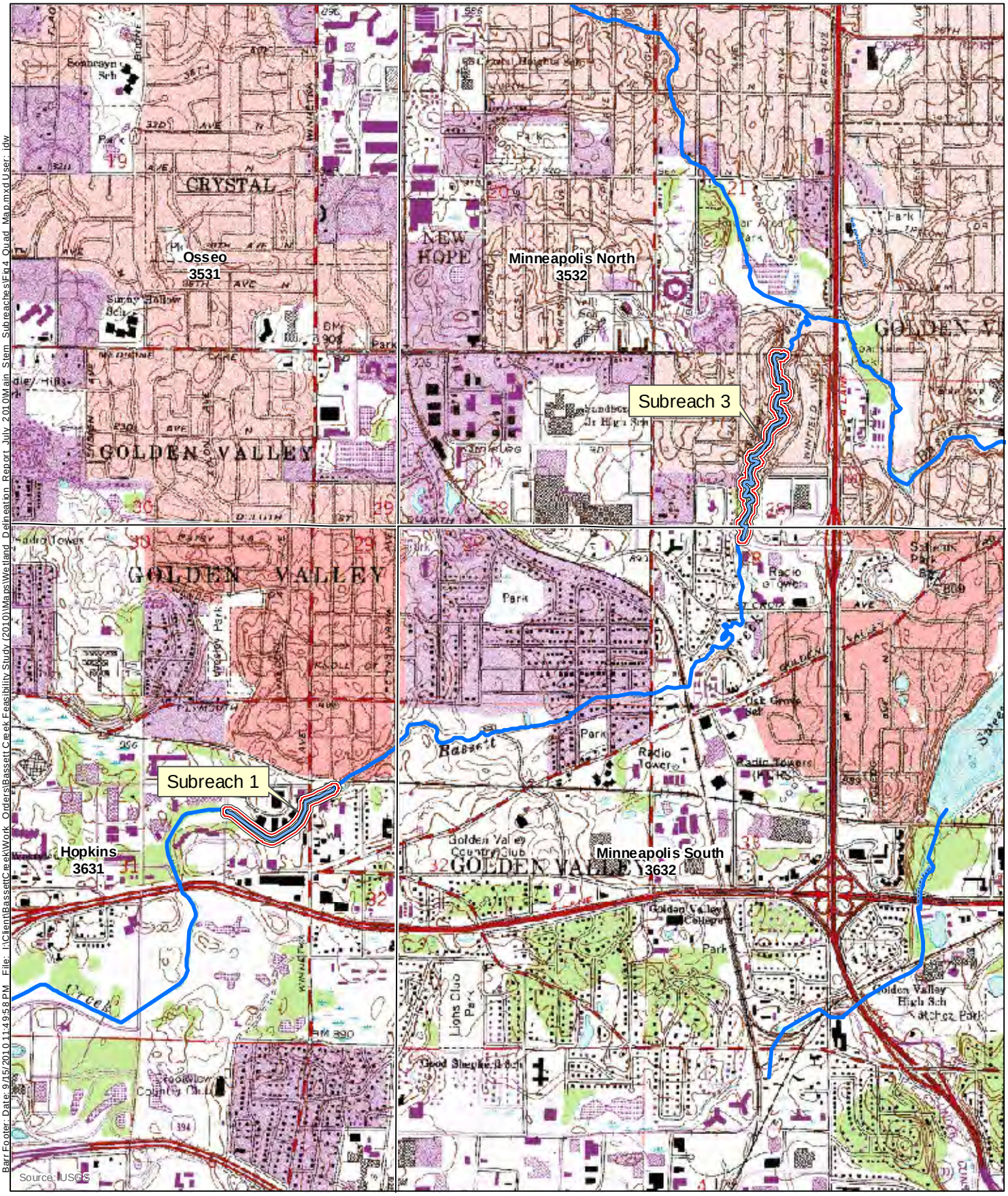
400 200 0 400

Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-3b
TOPOGRAPHIC MAP
Subreach 3
Bassett Creek Watershed
Management Commission
August 2010

BARR



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Subreaches

Main Stem Study Area

Creek Channels

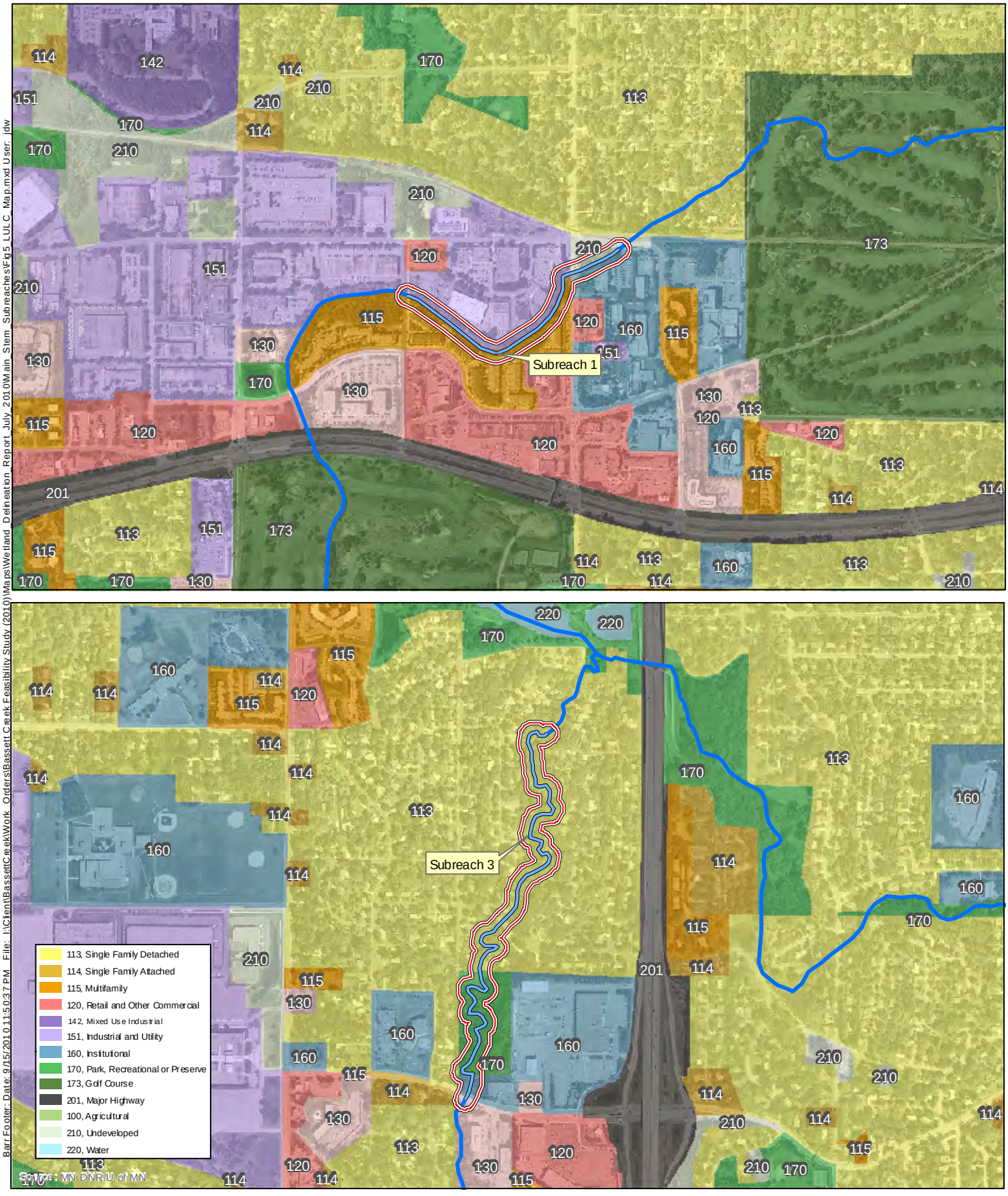
N
W E
S

2,000 1,000 0 2,000 Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-4
QUAD MAP
Bassett Creek Watershed
Management Commission
August 2010

BARR



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Subreaches

Main Stem Study Areas

Creek Channels

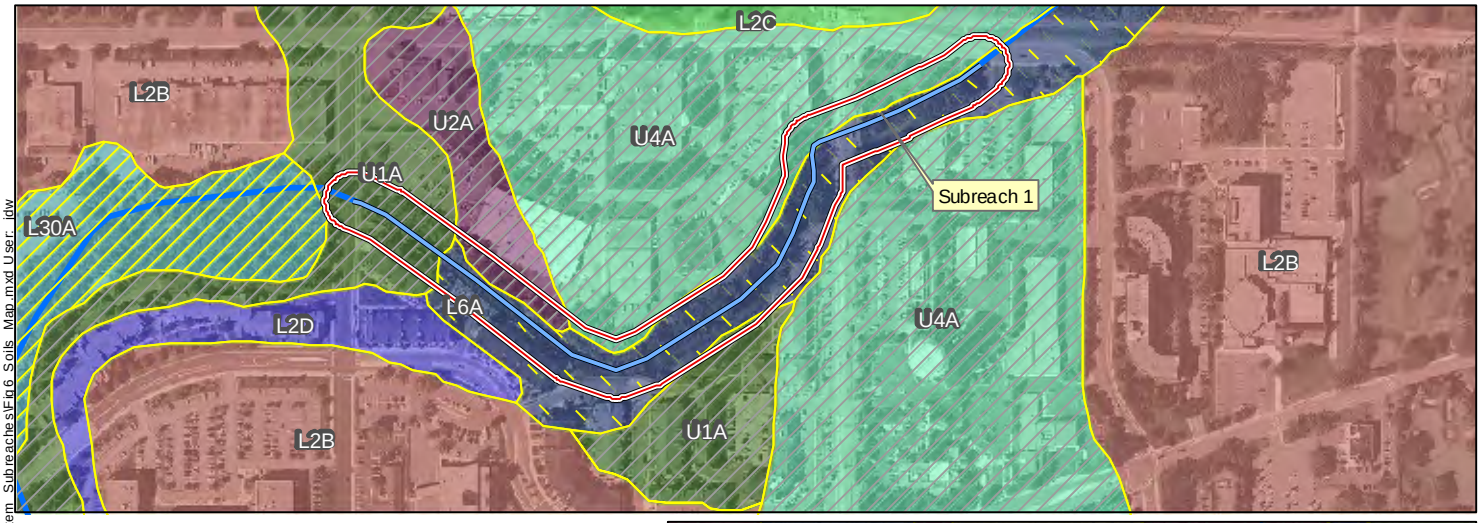
N
W E
S

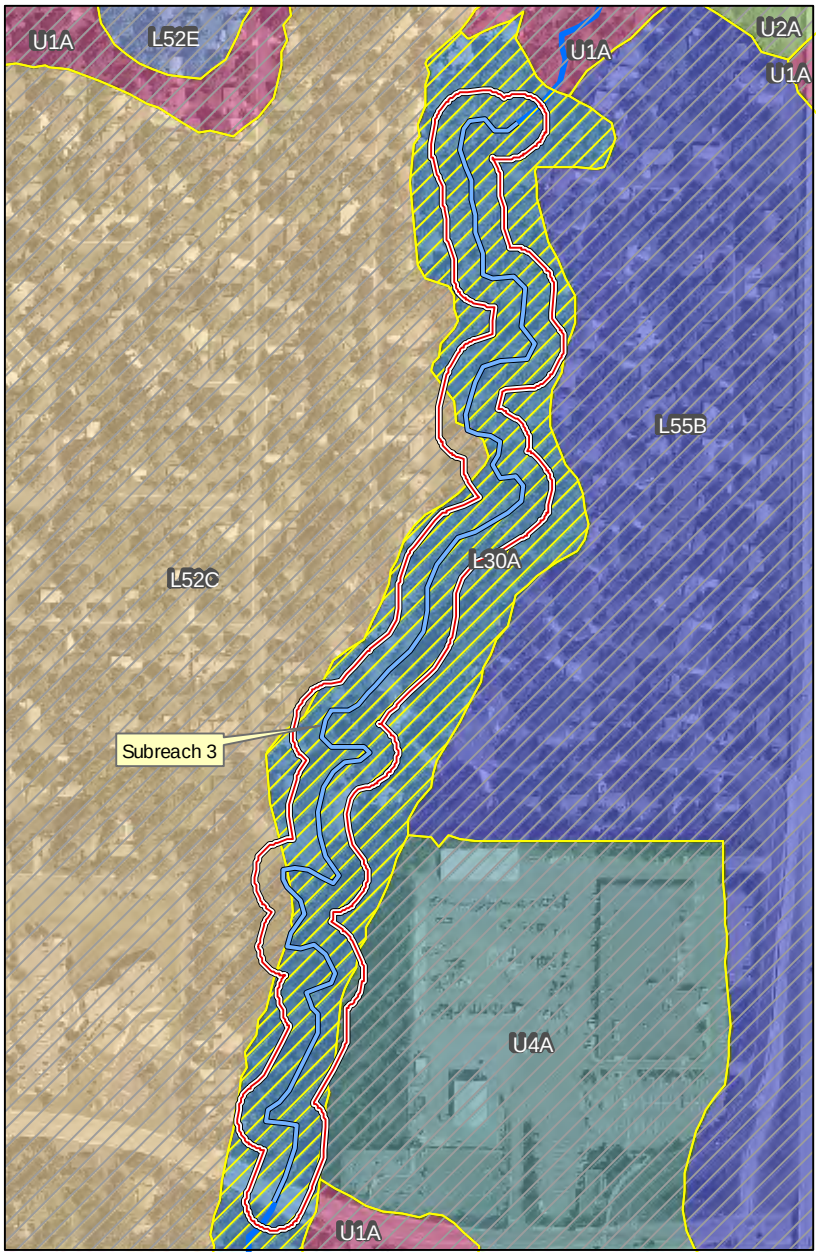
1,000 500 0 1,000
Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-5
2005 LAND COVER MAP
Bassett Creek Watershed
Management Commission
August 2010

BARR





Mapped Soil Units

- L2B, Malardi-Hawick complex, 1 to 6 percent slopes
- L2C, Malardi-Hawick complex, 6 to 12 percent slopes
- L2D, Malardi-Hawick complex, 12 to 18 percent slopes
- L30A, Medo soils, depressional, 0 to 1 percent slopes
- L52C, Urban land-Lester complex, 2 to 18 percent slopes
- L52E, Urban land-Lester complex, 18 to 35 percent slopes
- L55B, Urban land-Malardi complex, 0 to 8 percent slopes
- L6A, Biscay loam, 0 to 2 percent slopes
- U1A, Urban land-Udorthents, wet substratum, complex, 0 to 2 percent slopes
- U2A, Udorthents, wet substratum, 0 to 2 percent slopes
- U4A, Urban land-Udipsamments (cut and fill land) complex, 0 to 2 percent slopes

Soil Hydric Rating

- All Hydric
- Not Hydric
- Partially Hydric
- Unknown Hydric

Source: USDA NRCS

- Subreaches
- Main Stem Study Areas
- Creek Channels

N
W E
S

600 300 0 600 Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-6
SOILS MAP
Bassett Creek Watershed Management Commission
August 2010

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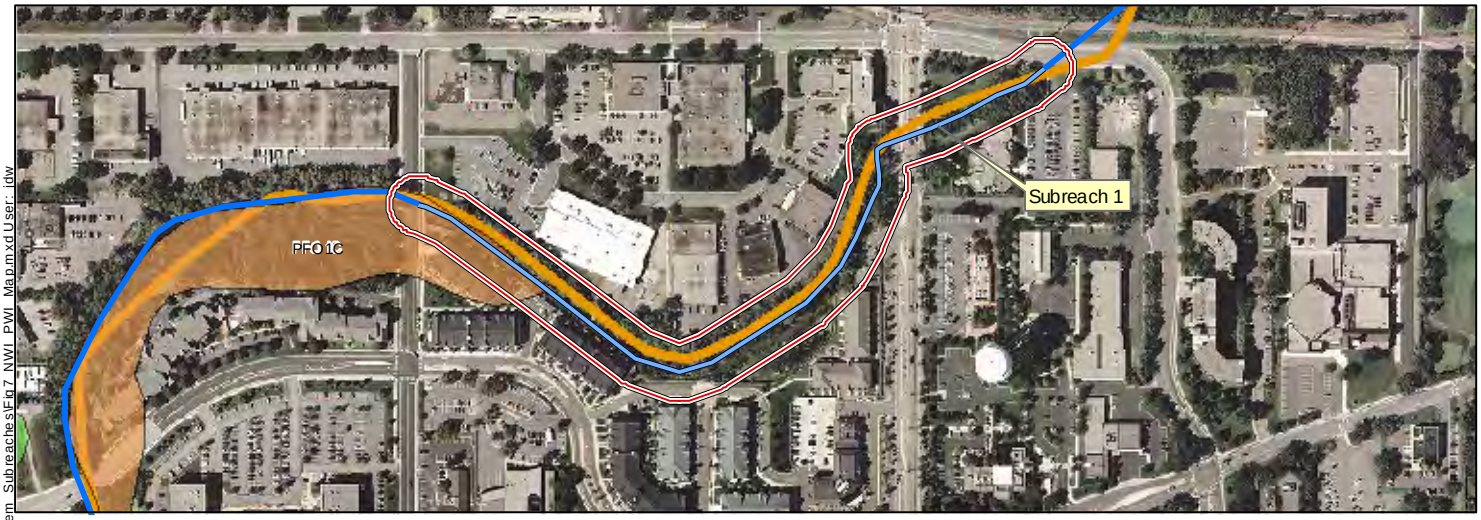

Public Water Inventory Watercourse

National Wetland Inventory

Circular 39 Wetlands

- Deep marsh
- Shallow marsh
- Shallow open water
- Wooded swamp

Source: USFWS

- Subreaches
- Main Stem Study Areas
- Creek Channels

N W E S

600 300 0 600 Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-7
NATIONAL WETLAND INVENTORY AND PUBLIC WATERS INVENTORY MAP
Bassett Creek Watershed Management Commission
August 2010

BARR

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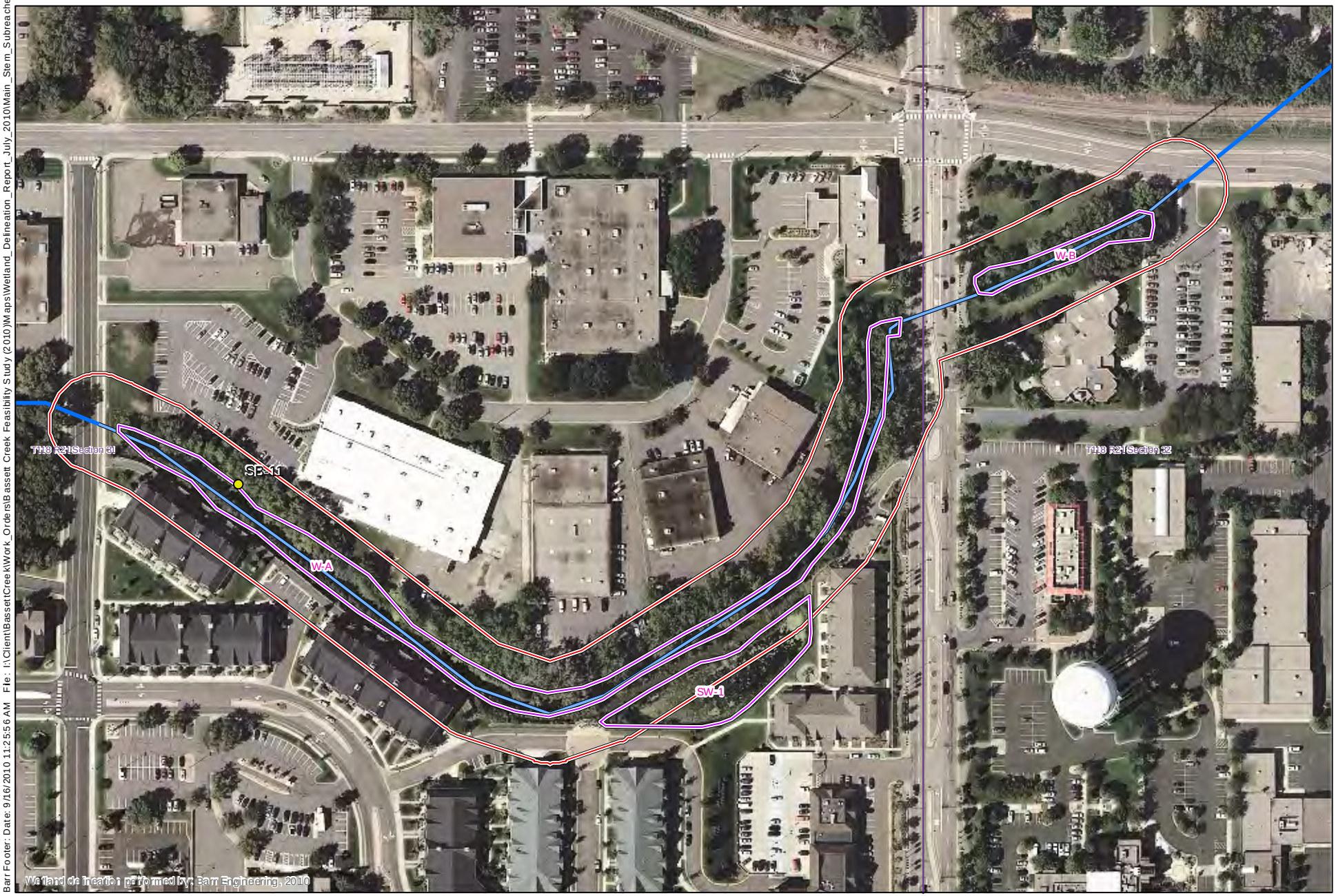


Wetland Delineation
Data point
Subreach 1
Main Stem Study Area
Creek Channels

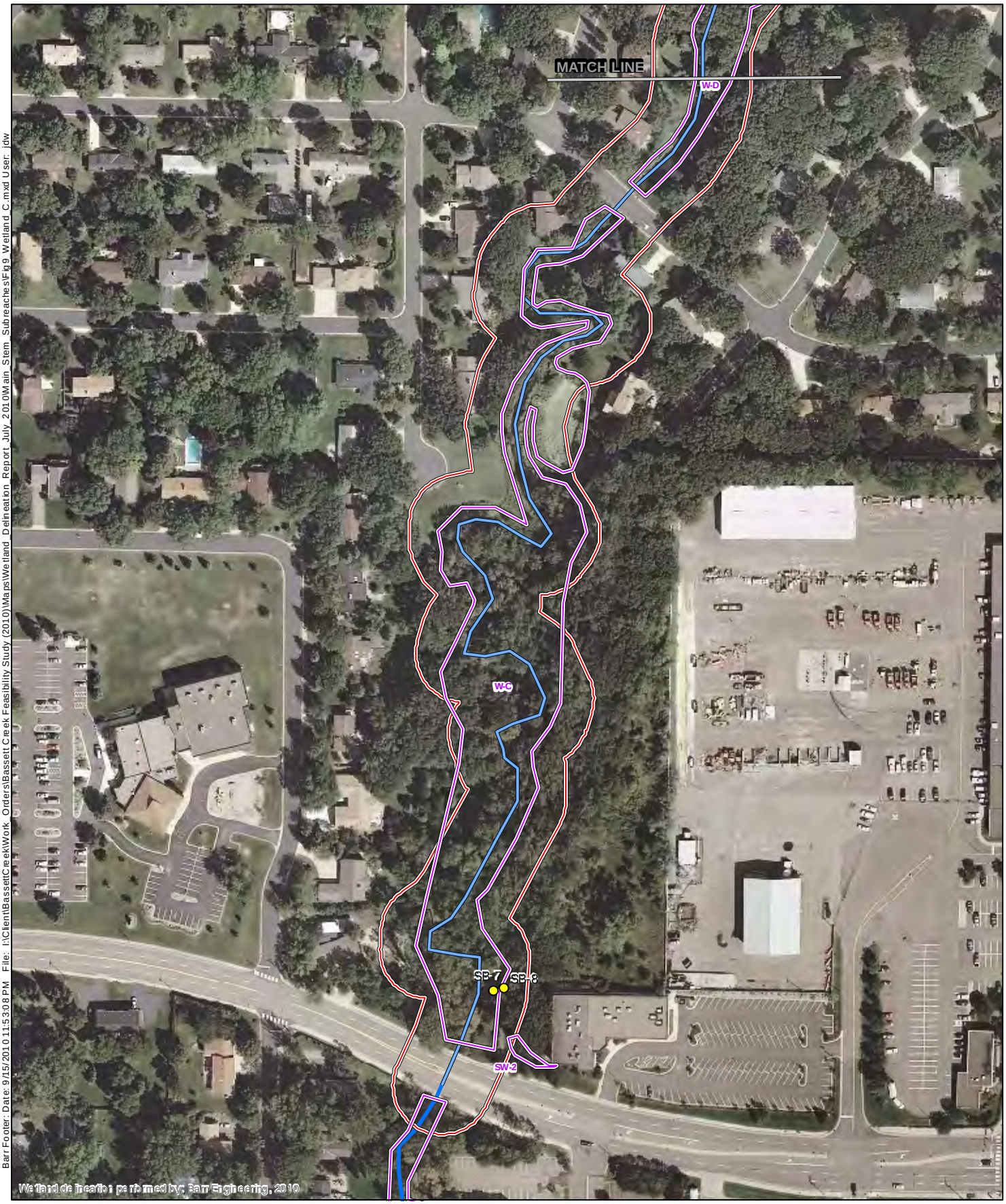
N
W E
S

200 100 0 200
Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

BARR

Figure B-8
WETLANDS A AND B
Bassett Creek Watershed
Management Commission
August 2010



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Data Points
Wetland Delineation
Subreach 3
Main Stem Study Area
Creek Channels

N
W E
S

200 100 0 200
Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

Figure B-9
WETLAND C
Bassett Creek Watershed
Management Commission
August 2010

BARR

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Wetland Delineation
Main Stem Study Area
Subreach 3
Creek Channels

N
W E
S

200 100 0 200
Feet

MAIN STEM
BASSETT CREEK
WETLAND DELINEATION

BARR

Figure B-10
WETLAND D
Bassett Creek Watershed
Management Commission
August 2010

Appendix

Appendix B-1

Site Photographs

Photo 1: Wetland A. View of Creek and surrounding vegetation.

Photo 2: Wetland A. View of transition from upland to wetland at Data point SB-9.

Photo 3: Surface Water 1. Storm water pond located adjacent to Wetland A.

Photo 4: Wetland B. View of Creek, steep stream bank, and typical vegetation.

Photo 5: Wetland C. View of Creek with excavated marsh in background.

Photo 6: Wetland C. View of Creek and wetland at Data point SB-7.

Photo 7: Surface Water 2. Small storm water pond adjacent to Wetland C.

Photo 8: Wetland D. View of floodplain.

Appendix B-2

Wetland Data Forms

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Bassett Creek | Applicant/Owner: BCWMC | City/County: Golden Valley/Hennepin | State: MN | Sampling Date: 07/09/10

Sampling Point: SB7 | Section: 28 | Township: 118 | Range: 21 | Investigator(s): GMH

Land Form: Hillslope | Local Relief: | Slope %: | Soil Map Unit Name: Medo

Subregion (LRR): M | Latitude: 472057 | Longitude: 4982999 | Datum: Nad83, UTM Zone 15N

NWI/Cowardin Classification: PFOA | Circular 39 Classification: 1

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in remarks)

Are vegetation No Soil No Hydrology No significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation No Soil No Hydrology No naturally problematic?

Eggers & Reed (primary): Floodplain Forest

Eggers & Reed (secondary):

Eggers & Reed (tertiary):

Eggers & Reed (quaternary):

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? Yes

Wetland hydrology present? Yes

Is the sampled area within a wetland? Yes

Remarks (explain any answers if needed):

VEGETATION

	Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status *
1.	Acer saccharinum	10	No	FACW
2.	Fraxinus nigra	10	No	FACW
3.	Acer negundo	50	Yes	FACW
4.		0		
	Total Cover:	70		

	Sapling/Shrub Stratum (Plot Size: 30')			
1.	Rhamnus cathartica	75	Yes	FACU
2.	Sambucus nigra ssp. canadensis	5	No	FACW
3.		0		
4.		0		
5.		0		
	Total Cover:	80		

	Herb Stratum (Plot Size: 5')			
1.	Lycopus americanus	20	No	OBL
2.	Impatiens capensis	75	Yes	FACW
3.	Phalaris arundinacea	10	No	FACW
4.		0		
5.		0		
6.		0		
7.		0		
8.		0		
	Total Cover:	105		

	Woody Vine Stratum (Plot Size: 5')			
1.	Parthenocissus quinquefolia	5	Yes	FAC
2.	Vitis riparia	5	Yes	FACW
	Total Cover:	10		

* In USFWS Region 3, which includes all of MN

% Bare Ground in Herb Stratum: 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 80.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species	20	X 1	20
FACW Species	165	X 2	330
FAC Species	5	X 3	15
FACU Species	75	X 4	300
UPL Species	0	X 5	0
Column Totals:	265 (A)		665 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

Yes — Dominance Test is >50%

No — Prevelance Index ≤ 3.0 [1]

No — Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)

No — Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present? Yes

Remarks:
(include photo numbers here or on a separate sheet)

WETLAND DETERMINATION DATA FORM - Midwest Region

SOIL

Sampling Point: SB7

Profile Description: (Describe to the depth needed to document the indicator or confirm the abscence of indicators).

	Depth	Matrix		Redox Features					
	(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
1.	0 - 4	10YR 2/1	100					loamy sand	
2.	4 - 8	10YR 2/1	50	10YR 5/2	25			loamy sand	
3.	4 - 8			10YR 3/3	25				
4.	8 - 18	10YR 3/2	50	10YR 3/1	25			loamy sand	
5.	8 - 18			10YR 4/3	25				
6.	-								

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **[2] Location: PL=Pore Lining, M=Matrix.**

Hydric Soil Indicators: (applicable to all LRRs, unless otherwise noted)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☑ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (explain in soil remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): **Type:** _____ **Depth (inches):** -

Hydric soil present? Yes

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (explain in remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface water present? ☐ **Surface Water Depth (inches):** _____

Water table present? ☐ **Water Table Depth (inches):** _____

Saturation present? (includes capillary fringe) ☑ **Saturation Depth (inches):** 15

Wetland hydrology present? Yes

Recorded Data: ☐ Aerial Photo ☐ Monitoring Well ☐ Stream Gauge ☐ Previous Inspections **Describe:**

Hydrology Remarks:

7/20/2010 10:51:31 AM

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Bassett Creek | Applicant/Owner: BCWMC | City/County: Golden Valley/Hennepin | State: MN | Sampling Date: 07/09/10

Sampling Point: SB8 | Section: 28 | Township: 118 | Range: 21 | Investigator(s): KSW

Land Form: Hillslope | Local Relief: | Slope %: | Soil Map Unit Name: Medo

Subregion (LRR): M | Latitude: 472061 | Longitude: 4983000 | Datum: Nad83, UTM Zone 15N

NWI/Cowardin Classification: upland | Circular 39 Classification: upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in remarks)

Are vegetation No | Soil No | Hydrology No | significantly disturbed? | Are "normal circumstances" present? Yes

Are vegetation No | Soil No | Hydrology No | naturally problematic?

Eggers & Reed (primary): Upland

Eggers & Reed (secondary):

Eggers & Reed (tertiary):

Eggers & Reed (quaternary):

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? Yes

Hydric soil present? No

Wetland hydrology present? No

Is the sampled area within a wetland? No

Remarks (explain any answers if needed):

VEGETATION

	Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status *
1.	Fraxinus pennsylvanica	30	Yes	FACW
2.	Quercus alba	2	No	FACU
3.		0		
4.		0		
	Total Cover:	32		
	Sapling/Shrub Stratum (Plot Size: 30')			
1.	Rhamnus cathartica	20	Yes	FACU
2.	Fraxinus pennsylvanica	20	Yes	FACW
3.		0		
4.		0		
5.		0		
	Total Cover:	40		
	Herb Stratum (Plot Size: 5')			
1.	Phalaris arundinacea	3	No	FACW
2.	Solidago canadensis	20	Yes	FACU
3.	Rhamnus cathartica	20	Yes	FACU
4.	Poa palustris	5	No	FACW
5.	Cirsium arvense	2	No	FACU
6.	Leonurus cardiaca	5	No	NO
7.	Medicago lupulina	20	Yes	FAC
8.	Glechoma hederacea	20	Yes	FACU
	Total Cover:	95		
	Woody Vine Stratum (Plot Size: 5')			
1.	Parthenocissus quinquefolia	30	Yes	FAC
2.	Vitis riparia	2	No	FACW
	Total Cover:	32		

* In USFWS Region 3, which includes all of MN

% Bare Ground in Herb Stratum: 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 57.14% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species	0	X 1	0
FACW Species	60	X 2	120
FAC Species	50	X 3	150
FACU Species	84	X 4	336
UPL Species	0	X 5	0
Column Totals:	194 (A)		606 (B)

Prevalence Index = B/A = 3.1

Hydrophytic Vegetation Indicators:

Yes — Dominance Test is >50%

No — Prevelance Index ≤ 3.0 [1]

No — Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)

No — Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present? Yes

Remarks: (include photo numbers here or on a separate sheet)

Additional species include: 1 % Viola sp., 1% Rumex crispus, 2% Alliaria petiolata, 2% Ambrosia artemisiifolia

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WETLAND DETERMINATION DATA FORM - Midwest Region

SOIL

Sampling Point: SB8

Profile Description: (Describe to the depth needed to document the indicator or confirm the abscence of indicators).

	Depth	Matrix		Redox Features					
	(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
1.	0 - 10	10YR 4/2						sandy loam	
2.	10 - 30	10YR 4/3		10YR 4/2	20			sandy loam	
3.	30 - 36	10YR 2/1						loam	
4.	-								
5.	-								
6.	-								

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **[2] Location: PL=Pore Lining, M=Matrix.**

Hydric Soil Indicators: (applicable to all LRRs, unless otherwise noted)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (explain in soil remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): **Type:** _____ **Depth (inches):** - | **Hydric soil present?** No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (explain in remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface water present? ☐ **Surface Water Depth (inches):** _____

Water table present? ☐ **Water Table Depth (inches):** _____

Saturation present? (includes capillary fringe) ☐ **Saturation Depth (inches):** _____

Wetland hydrology present? No

Recorded Data: ☐ Aerial Photo ☐ Monitoring Well ☐ Stream Gauge ☐ Previous Inspections **Describe:**

Hydrology Remarks: soil most at 36", dry above

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WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Bassett Creek | Applicant/Owner: BCWMC | City/County: Golden Valley/Hennepin | State: MN | Sampling Date: 08/09/10

Sampling Point: SB11 | Section: 31 | Township: 118 | Range: 21 | Investigator(s): GMH

Land Form: | Local Relief: | Slope %: 2 | Soil Map Unit Name: Biscay loam

Subregion (LRR): M | Latitude: -93.384443 | Longitude: 44.987692 | Datum: decimal degrees

NWI/Cowardin Classification: upland | Circular 39 Classification: upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in remarks)

Are vegetation No | Soil No | Hydrology No | significantly disturbed? | Are "normal circumstances" present? Yes

Are vegetation No | Soil No | Hydrology No | naturally problematic?

Eggers & Reed (primary): Upland

Eggers & Reed (secondary):

Eggers & Reed (tertiary):

Eggers & Reed (quaternary):

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic vegetation present? No

Hydric soil present? No

Wetland hydrology present? No

Is the sampled area within a wetland? No

Remarks (explain any answers if needed):

VEGETATION

	Tree Stratum (Plot Size:)	Absolute % Cover	Dominant Species?	Indicator Status *
1.	Acer negundo	30	Yes	FACW
2.	Rhamnus cathartica	10	Yes	FACU
3.		0		
4.		0		
	Total Cover:	40		

	Sapling/Shrub Stratum (Plot Size:)			
1.	Rhamnus cathartica	100	Yes	FACU
2.		0		
3.		0		
4.		0		
5.		0		
	Total Cover:	100		

	Herb Stratum (Plot Size:)			
1.	Parthenocissus quinquefolia	10	No	FAC
2.	Rhamnus cathartica	80	Yes	FACU
3.	Vitis riparia	1	No	FACW
4.	Ulmus americana	1	No	FACW
5.		0		
6.		0		
7.		0		
8.		0		
	Total Cover:	92		

	Woody Vine Stratum (Plot Size:)			
1.		0		
2.		0		
	Total Cover:	0		

* In USFWS Region 3, which includes all of MN

% Bare Ground in Herb Stratum: 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 25.00% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL Species	0	X 1	0
FACW Species	32	X 2	64
FAC Species	10	X 3	30
FACU Species	190	X 4	760
UPL Species	0	X 5	0
Column Totals:	232 (A)		854 (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

No — Dominance Test is >50%

No — Prevelance Index ≤ 3.0 [1]

No — Morphological Adaptations [1] (provide supporting data in vegetation remarks or on a separate sheet)

No — Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil & wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic vegetation present? No

Remarks:
(include photo numbers here or on a separate sheet)

WETLAND DETERMINATION DATA FORM - Midwest Region

SOIL

Sampling Point: SB11

Profile Description: (Describe to the depth needed to document the indicator or confirm the abscence of indicators).

	Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
1.	0 - 20	10YR 4/2						silty clay	
2.	-								
3.	-								
4.	-								
5.	-								
6.	-								

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains **[2] Location: PL=Pore Lining, M=Matrix.**

Hydric Soil Indicators: (applicable to all LRRs, unless otherwise noted)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (explain in soil remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): **Type:** _____ **Depth (inches):** - | **Hydric soil present?** No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (explain in remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface water present? ☐ **Surface Water Depth (inches):** _____

Water table present? ☐ **Water Table Depth (inches):** _____

Saturation present? (includes capillary fringe) ☐ **Saturation Depth (inches):** _____

Wetland hydrology present? No

Recorded Data: ☐ **Aerial Photo** ☐ **Monitoring Well** ☐ **Stream Gauge** ☐ **Previous Inspections** **Describe:**

Hydrology Remarks: none

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Appendix B-3

MN RAM Assessment Summaries

Wetland Functional Assessment Summary

Wetland Name	Hydrogeomorphology	Maintenance of Hydrologic Regime	Flood/ Stormwater/ Attenuation	Downstream Water Quality	Maintenance of Wetland Water Quality	Shoreline Protection
27-118-21-28-001	Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet), Riverine (within the river/stream banks), Slope, Floodplain (outside waterbody banks)	0.40	0.52	0.55	0.32	0.70
		Moderate	Moderate	Moderate	Low	High

						Additional Information		
Wetland Name	Maintenance of Characteristic Wildlife Habitat Structure	Maintenance of Characteristic Fish Habitat	Maintenance of Characteristic Amphibian Habitat	Aesthetics/ Recreation/ Education/ Cultural	Commercial Uses	Ground-Water Interaction	Wetland Restoration Potential	Wetland Sensitivity to Stormwater and Urban Development	Additional Stormwater Treatment Needs
27-118-21-28-001	0.37	0.65	0.03	0.41	0.00	Combination Discharge, Recharge	0.00	0.10	0.32
	Moderate	Moderate	Low	Moderate	Not Applicable		Not Applicable	Moderate	Low

Wetland Community Summary

		Vegetative Diversity/Integrity							
		Community							
Wetland Name	Location	Cowardin Classification	Circular 39	Plant Community	Wetland Proportion	Individual Community Rating	Highest Wetland Rating	Average Wetland Rating	Weighted Average Wetland Rating
27-118-21-28-001	27-118-21-21-001	PFO1A	Type 1	Floodplain Forest	70	0.1	0.10	0.10	0.10
							Low	Low	Low
		R2UBG	Type 5	Shallow, Open Water Communities	20	0.1	0.10	0.10	0.10
							Low	Low	Low
		PEMF	Type 4	Deep Marsh	10	0.1	0.10	0.10	0.10
							Low	Low	Low
					100		0.10	0.10	0.10

☑ *Denotes incomplete calculation data.*

Appendix C

Cultural and Historical Resources

REPORT ON PRELIMINARY RECONNAISSANCE SURVEY
CONDUCTED BY ARCHAEOLOGICAL RESEARCH SERVICES (ARS)
ALONG THE MAIN STEM OF BASSETT CREEK

CITIES OF CRYSTAL AND GOLDEN VALLEY, HENNEPIN COUNTY, MINNESOTA

During the week of June 14th, 2010, ARS conducted a pedestrian survey of two segments of Bassett Creek, i.e., the main stem between Wisconsin Avenue and Highway 100 and the north branch between 36th Avenue and Bassett Creek Pond.

A records and literature search that was completed in 2009 for the Basset Creek Watershed Management Commission (BCWMC) Resource Management Plan did not identify any known archaeological or historic resources along these two segments of the creek. [1] Nor, however, did it indicate that any systematic efforts had been made to survey these areas for cultural evidence. Consequently, as cultural resources are legally protected from adverse impact caused by publicly funded and/or licensed projects,[2] such survey efforts will presumably be required in order to determine how future management plans for Bassett Creek can ensure that archaeological evidence -- and possibly also above-ground historic features -- are adequately protected either through avoidance or mitigative data recovery.

In order to determine what areas along these two segments have archaeological and historic potential, ARS staff, under the direction of Christina Harrison:

1. compared current aerial photographs to earlier ones from the 1940s-1990s in order to determine changes in land use, vegetation patterns and, in some cases, topography;

2. interviewed property owners and other local residents likely to have knowledge about any past findings of archaeological/historic nature;

3. walked the entire length of the two segments inspecting both creek banks as well as any portions of the valley floor that may be impacted by future erosion control efforts.

---

[1] Harrison, Christina, 2009. Cultural Resource Phase 1A Review Conducted for the Bassett Creek Watershed Management Commission Resource Management Plan, Hennepin County, Minnesota.

[2] At the federal level, by Section 106 of the National Historic Preservation Act, within the state and its subdivisions, by the Minnesota Field Archaeology and the Minnesota Private Cemeteries Acts, as described in Harrison 2009.

Large scale aerial photographs of the survey areas were provided by Barr Engineering. Observations and recommendations were noted and referenced by subareas as indicated on the applicable aerial photographs, included in Appendix C as Main Stem Figures C01 to C06. Initial efforts to identify subareas by GPS readings proved too imprecise to be useful, due primarily to the usually quite dense foliage and frequently narrow, steep-sided topography of the valley.

In the following discussions and recommendations, standard Phase I testing refers to shovel testing at controlled intervals which may vary according to topographic and vegetational factors but should not exceed 10 meters/30 feet. Testing, recording and laboratory procedures should be in compliance with SHPO guidelines. As needed, recommendations should be provided for more intensive evaluative testing.

MAIN STEM FIGURE C01

Between the western end of the segment, at Wisconsin Avenue, and the point where the creek crosses Winnetka Avenue, the northern side of the creek has been developed for industrial and commercial use right up to the upper edge of the bank. Disturbance has clearly been quite major and the area appears completely lacking in archaeological potential.

Along the southern side of the same segment, where the terrain is higher, the construction of a massive brick retaining wall all along the creek has effectively eliminated all archaeological potential.

From Winnetka Avenue east/northeast to 10th Avenue, the apparently straightened creek is flanked by high, steep banks where areas of erosion exposure were inspected with negative results.

These negative results indicate that possible future efforts to mitigate erosion would not impact any significant cultural resources.

Between Pennsylvania Avenue N. and Idaho Avenue N., Bassett Creek bisects the Golden Valley Country Club, formed as the Golden Valley Golf Club in 1916 and first developed as a 9-hole course on 133 acres of pasture land, corn fields and swamp land north of the railroad tracks. Later

expanded to 18 holes, the course was renovated in the late 1920s by A.W. Tillinghast whose design, following some course modifications made in the 1940s and 1960s, since has been restored.[3] Should future management actions involve full Section 106 review, this older northern part of the golf course may need to be researched and evaluated as a historic landscape.

As several segments of the creek bisect terrain that still appears fairly undisturbed, ARS staff conducted a visual inspection of both sides of the stream, making the following observations regarding the presence or absence of archaeological potential. Lettered creek segments are shown in appended Main Stem Figure C01.

Between A and B, the northwestern side of the creek encompasses a mostly undisturbed, wooded, approximately 3 to 6 feet high terrace which appears to have archaeological potential and warrants standard Phase I testing. The opposite side is an open, landscaped fairway which is separated from the creek by a grassy slope. It appears to have less archaeological potential and should only warrant testing if archaeological evidence is encountered on the northwestern side.

Between B and C, neither the landscaped fairway north of the creek, nor the mostly pronounced north-facing slope on the south side appear to have enough archaeological potential to warrant testing.

Between C and D, both sides of the creek have already been extensively riprapped for erosion control and appear unlikely to need further modification or archaeological survey.

The D to E segment begins with a culvert crossing under a landscaped fairway, then continues east through a fairly low area flanked on the south by wooded slope and on the north by landscaped fairway, neither of them considered to have archaeological potential.

Between E and F, the creek skirts the southern slope of a wooded knoll with several maintenance buildings. The south side of the creek is open, all landscaped grassy fairway. Both appear to have enough archaeological potential to warrant Phase I level testing on the most level spots along the creek

[3] Information provided on the Golden Valley Country Club web site.

Between F and G, parts of the creek flow through a fairly low area but several higher terraces on both sides appear level and undisturbed enough to warrant Phase I testing.

Between G and H, the creek appears to have been straightened and widened. Its western half is flanked by low terrain, its eastern half by higher but heavily landscaped fairways. Both appear to lack archaeological potential.

Between H and the east edge of the golf course, the creek again appears straightened and widened but it is now flanked by wooded, less disturbed higher terrain which warrants Phase I testing of all reasonable level areas along the upper bank.

MAIN STEM FIGURE C02

Between the golf course and Hampshire Avenue, most of the creek appears to have been straightened, now flowing between landscaped residential yards. Due to these modifications of the original terrain, the segment seems to lack archaeological potential.

As shown in the aerial photograph Figure C02, most of the creek between Hampshire Avenue and the railroad embankment east of Douglas Drive has been straightened. For the most part, it also flows through low, frequently quite poorly drained areas without any well defined level and high ground near the creek. However, between Hampshire and Florida Avenues and also a short distance east of the latter are a few low terraces that rise above the 870 elevation contour. These areas appear to be the only ones west of the railroad that warrant further visual inspection and possibly also supplementary Phase I testing.

Due east of the railroad embankment, as the creek turns sharply towards the north, it is flanked by the steep western slope of a pronounced knoll and, on the west, by a low creek plain, i.e. on both sides by areas completely lacking in archaeological potential.

MAIN STEM FIGURE C03

The creek segment between Areas A and B, continuing to skirt the base of a steep northwest-facing slope, is elsewhere flanked by low creek plain where it rarely comes into close proximity of any higher ground that may have invited historic use, the exception being the terrace indicated by the letter A. Although the latter may have been somewhat modified by the construction of a pedestrian trail and creek crossing, it still warrants Phase I testing.

North/northeast of Area B, the creek continues across the low, much meandered valley floor, again rarely touching any higher ground with archaeological potential except where the western bank abuts two landscaped residential yards south of St. Croix Avenue yards which, judging by the quite extensive use of boulder riprap, already have been much impacted by bank erosion. Should further erosion control be needed, any areas of potential impact would need Phase I testing.

Along the eastern bank, between Areas C and D, higher ground which may have invited historic use has since been too heavily modified by landscaping for the Colonial Acres complex to retain any archaeological potential.

North of St. Croix Avenue, between Areas D and E, east of the creek and west of Golden Valley Park, is a segment of original, fairly high creek bank which appears to have enough archaeological potential to warrant Phase I testing.

West of the creek, from St. Croix Avenue north, is nothing but low creek plain without archaeological potential. Potential is also lacking east of the creek, where a pedestrian trail follows what appears to be a completely man-made berm traversing low formerly meandered terrain all along the stream.

MAIN STEM FIGURE C04

As shown in the aerial photograph in Figure C04, the southern part of this creek segment follows a somewhat straightened course north towards Duluth Street, largely traversing low, poorly drained areas of flood plain, only coming close to higher terrain with enough archaeological potential to warrant testing at Areas A and B (both rather narrow terraces between the creek and a fairly pronounced slope up to residential yards) and C (a grassy, mostly mowed but apparently fairly natural, gradual slope up towards a residence).

East of the creek, Area D features the same raised trail and otherwise low terrain as the eastern bank discussed above for Figure 3 north of St. Croix Avenue, i.e. an area lacking archaeological potential. In Area E, between the creek and a large parking lot, is a strip of fairly natural upper bank that warrants full Phase I review.

North of Duluth Street, Areas F and G, due west and east of the creek, have both been too heavily landscaped to retain archaeological potential.

Along the east side of the creek, Area H, following the base of a pronounced westward slope, features remnants of a lower terrace which, in spite of fairly serious bank erosion, still have enough archaeological potential to warrant Phase I review.

Between Areas F and J, the west side of the creek is flanked by a fairly wide stretch of much meandered, low creek plain. Only Area I features slightly higher terrain that warrants further Phase I review.

Area J encompasses a peninsula-shaped terrace which directly overlooks the creek and is being impacted by fairly severe vertical bank erosion. Although partly modified by landscaping, the area warrants full Phase I review.

East of the creek, Area K features nothing but low, much meandered creek plain without archaeological potential.

MAIN STEM FIGURE C05
Area A encompasses a fairly level to gently sloping terrace that directly overlooks the creek and, though partially landscaped, still may have considerable archaeological potential. Some erosion control measures in the form of boulder riprap and native plantings are already in place but Phase I testing should precede any further reshaping of the bank.

Area B appears to be a mostly man-made berm but this assumption needs to be verified through Phase I testing.

Areas C and D are terraces directly adjacent to the meandering course of the creek. Both warrant full Phase I review.

Other creek segments south of Westbrook Road all traverse low, much meandered creek plain without archaeological potential.

North of Westbrook Road, as the valley narrows between increasingly steep bluff slopes, the creek

generally traverses low, marshy segments of the floodplain, rarely coming close to any higher terrain except for a couple of fairly steeply sloped residential yards and then a few stretches of steep basal bluff slope all areas without archaeological potential.

MAIN STEM FIGURE C06

The southern two thirds of this segment is similar in character to the northern part of the Figure C05 segment but in this case, the steep-sided valley still features a few areas where terraces between the creek and the base of the bluff are wide enough to have invited historic use. Indicated as Areas A to B, they all have enough archaeological potential to warrant full Phase I review.

Further north, between Areas C and F, the west side of the creek features either low creek plain or higher but fairly steeply sloping terrain. Elsewhere, i.e. within Areas E, F and H, the banks of the creek abut a series of residential yards which are high and level enough to have archaeological potential and need further review.

Area G encompasses a stretch of high ground which appears to have been seriously modified by the construction of 29th Avenue on a raised embankment as well as a culvert connecting the creek and the ponds north of the avenue. Visual inspection of the current land surface and numerous subsoil exposures indicated a complete lack of archaeological potential.

Bar Footer: Date: 7/21/2010 10:18:37 AM File: \\netapp2\GIS\Client\BassettCreek\Work Orders\Resource Management Plan\Maps\Basemaps\Archeology Assessment\Fig01 Main Stem.mxd User: JJL2

Winsdale St
Knoll St
Plymouth Ave
Phoenix St
Golden Valley Rd
Hampshire Ave N
Edgewood Ave N
Douglas Dr N
Florida Ave N
Idaho Ave N
W Constance Dr
E Constance Dr
Zane Ave N

N

Feet
100 0 100 200

Figure C02

MAIN STEM BASSET CREEK
Wisconsin Ave to Hwy 100

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Figure 3

MAIN STEM BASSET CREEK
Wisconsin Ave to Hwy 100

Kenneth Way
Duluth St
Duluth La
Adair Ave N
Wolfberry La
880
870
860
J
K
H
I
F
G
E
C
B
A
D
N
Feet
100 0 100
Figure 4
MAIN STEM BASSET CREEK
Wisconsin Ave to Hwy 100
Barr Footer: Date: 7/21/2010 10:49:50 AM File: \\netapp2\GIS\Client\BassettCreek\Work Orders\Resource Management Plan\Maps\Basemaps\Archeology Assessment\Fig04 Main Stem.mxd User: JJL2

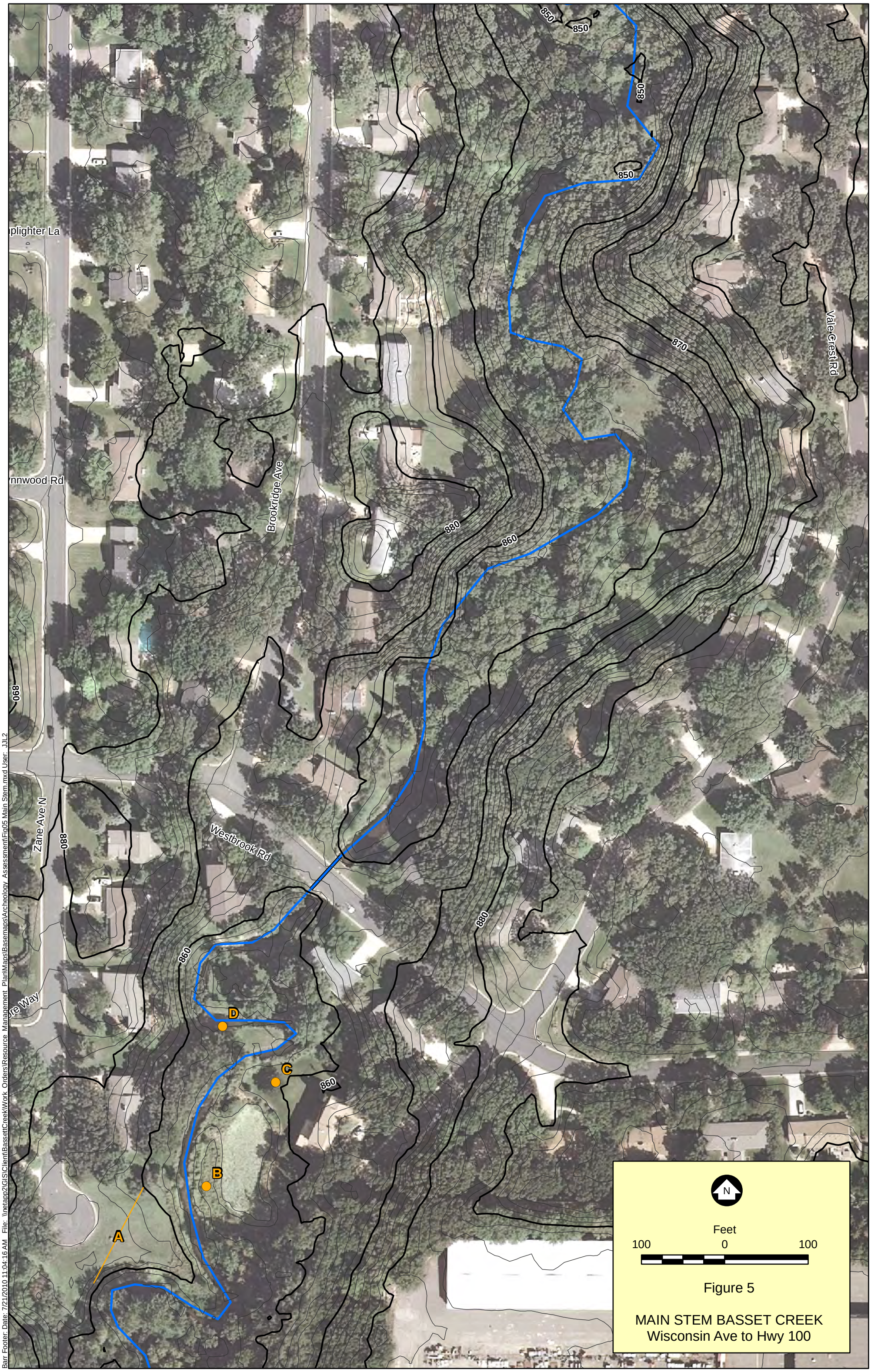

Figure 5

MAIN STEM BASSET CREEK
Wisconsin Ave to Hwy 100

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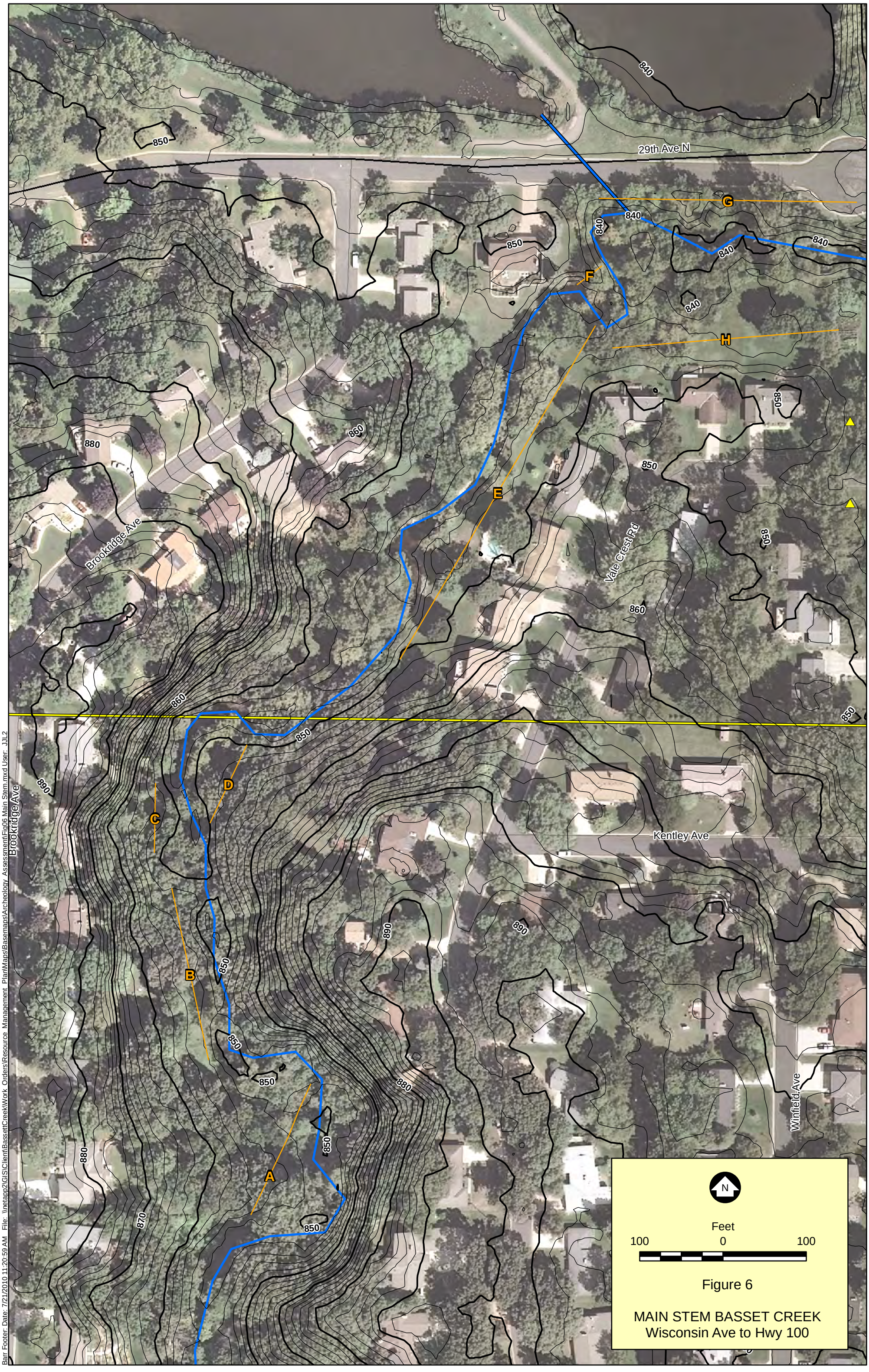

Figure 6

MAIN STEM BASSET CREEK
Wisconsin Ave to Hwy 100

Item 5A

Feasibility Report for
North Branch Bassett Creek Restoration Project

Crystal • Golden Valley • Medicine Lake • Minneapolis
Minnetonka • New Hope • Plymouth • Robbinsdale • St. Louis Park

Bassett Creek Watershed Management Commission

September 2010

Feasibility Report for North Branch Bassett Creek Restoration Project

Crystal, Minnesota

Prepared for Bassett Creek Watershed Management Commission

September 2010

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the Laws of the State of Minnesota.

_____

Jeffrey D. Weiss
Reg. No. 48031 Date : September 16, 2010

Prepared by
Barr Engineering Company
4700 West 77th Street • Minneapolis, MN 55435-4803
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Feasibility Report for
North Branch Bassett Creek Restoration Project

September 2010

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1.0 Executive Summary

1.1 Background

In January 2007 the Bassett Creek Watershed Management Commission's Technical Advisory Committee recommended that the Commission add stream channel restoration projects to the Commission's 10-year Capital Improvements Program (CIP). The restoration projects included the Main Stem of Bassett Creek, the North Branch of Bassett Creek, the Sweeney Lake Branch of Bassett Creek, and Plymouth Creek. The Commission completed a draft Resource Management Plan (RMP) in April 2009 (updated July 2009) that included several stream restoration projects. North Branch Bassett Creek was one of the stream projects included in the RMP; the project includes the restoration of a reach from 32nd Avenue North to approximately 200 feet upstream of Douglas Drive North (**Figure 1**, Location Map). This reach is included in the Commission's CIP for design and construction in 2011 (the scheduled construction date has changed since completion of the RMP).

In 2008, the City of Golden Valley completed the Commission's first channel restoration project – the Sweeney Lake Branch, King Hill Area project. This project involved restoration of approximately 600 feet of the upstream end of the Sweeney Lake Branch of Bassett Creek. The Plymouth Creek, Reach 1 and Bassett Creek Main Stem, Reach 2 projects are currently underway.

1.2 General Project Description and Estimated Cost

The potential stabilization measures identified for implementation in this reach consist of the following:

- removal of trees and vegetation,
- grading reaches of stream bank,
- stabilizing storm sewer outfalls that discharge into the channel,
- establishing new vegetation on areas disturbed by construction,
- installing a variety of stream stabilization measures to address erosion problems, including riprap, biologs, cross vanes, j-vanes, live stakes, live fascines, and vegetated reinforced soil slope (VRSS)

The North Branch construction costs are estimated to be $834,900. A detailed cost estimate is included in **Section 4.3**. Temporary construction easements are not included in the cost estimate at this time, but they are not expected to significantly increase the total cost. The proposed restoration

work within the City of Crystal is mostly on private property and will require temporary construction easement acquisitions to complete construction.

1.3 Recommendations

The Commission's CIP includes restoration of North Branch Bassett Creek, with project design and construction work slated to begin in 2011. The stabilization of this reach will provide water quality improvement by 1) repairing actively eroding sites; and 2) preventing erosion at other sites by installing preemptive measures to protect existing stream banks. This project will also be cost efficient because no permanent easements will be required.

It is recommended that the restoration of North Branch Bassett Creek proceed into the design and construction phase of the project. It is also recommended that the Bassett Creek CIP be revised to reflect the revised cost estimate.

2.0 Background and Objective

2.1 Goals and Objective

The North Branch Bassett Creek project reach has erosion problems in at least 20 locations. The objective of this study is to review the feasibility of implementing measures to stabilize the stream banks and storm sewer outfalls on the North Branch Bassett Creek and to provide conceptual designs and cost estimates of measures that could potentially be used at each of the 20 erosion sites.

Stream Stabilization

The City of Crystal has recognized the importance of addressing stream erosion and sedimentation issues; however, funding limitations have prevented repair of these sites to date. With the availability of funding from the BCWMC, repair of these sites can now proceed.

The City of Crystal has completed periodic erosion inventories along this reach, beginning in 2003. The city's latest inventory identified 16 erosion sites, all with moderate erosion. Barr staff added four sites (Sites 1, 9, 13, and 18) with minor to moderate erosion or the potential for erosion problems in the near future. One of the sites previously identified as moderate erosion by the city was reclassified as severe erosion.

The goals of the stream stabilization project are to:

- Stabilize eroding banks to improve water quality.
- Preserve natural beauty along North Branch Bassett Creek and contribute to the natural habitat and species diversification in place by planting eroded areas with native vegetation.
- Prevent future channel erosion along the creek and the resultant negative water quality impact of such erosion on downstream water bodies.

Considerations

- Restoration must minimize floodplain impacts. Several businesses and residences are located near the creek, so it is critical to ensure the proposed project does not increase flood elevations that impact these properties.
- Maintain existing floodplain storage and cross sectional areas.

2.2 Background

2.2.1 Reach Description

The North Branch Bassett Creek (**Figure 1**) project reach extends for approximately 3,000 feet, from 32nd Avenue North to approximately 200 feet upstream of Douglas Drive, in the City of Crystal. Land use immediately adjacent to this reach is a mix of high density residential (apartments and condominiums) and single family residential.

Barr Engineering (Barr) staff walked the reach in June 2010 and identified a total of 20 sites on this reach that need some form of stabilization to address bank erosion, scour, and/or bank failure. Of the 20 sites, four have minor to moderate erosion, 15 have moderate erosion, and one has severe erosion. The total length of bank erosion is approximately 1,500 feet. Photos of each of the erosion sites are found in Appendix A. The bank failures along this reach appear to be caused by a combination of natural stream erosion processes, problems associated with changing watershed hydrology, and excessive shading that, in some places, has shaded out the understory. Even when cities incorporate best management practices (BMPs) to minimize the impacts of increased runoff, development still fundamentally changes the hydrology of the watershed. The BMPs commonly used reduce the impacts of urban development on streams receiving stormwater runoff, but physical changes and increased rates of erosion occur.

Implementation of the project will require coordination between the BCWMC and the City of Crystal to ensure long term project success. Most importantly, the City of Crystal will need to assist in the maintenance of the designed measures, particularly the vegetation maintenance component since poor vegetation management practices are a common cause of bank failures. A major aspect of the vegetation component will be the City working with the private landowners to ensure that the plantings and maintenance meet the objectives of stream bank stabilization while considering the landowners' needs.

2.2.2 Past Documents and Activities Addressing this Reach

City Erosion Inventory

The City of Crystal has completed erosion inventories and assessments on the North Branch Bassett Creek as it flows through the City. The City has updated its inventory every one to two years.

City staff completed the inventories by walking the length of the North Branch, identifying, locating, and documenting sites of significant bank erosion and sediment deposition, as well as the presence of

obstructions, storm sewer outlet structures, and other utilities within the stream channel. Documentation includes mapping the location of the site on aerial photographs, notes on the details of each site, and a digital photograph of each site.

The City of Crystal's erosion inventory identified 16 erosion sites within the study reach. When Barr staff completed a field review of the reach in 2010, four additional sites were identified as having minor to moderate erosion problems or the potential for erosion problems in the near future. Combining the 16 sites identified by the City and the four sites added by Barr staff brings to 20 the number of erosion sites along the reach.

BCWMC

As part of the *Bassett Creek Main Stem Watershed Management Plan* (2000), the BCWMC estimated the sediment and phosphorus loading to Bassett Creek from channel erosion. Three erosion scenarios were evaluated for increased loadings resulting from three levels of channel erosion - minor, moderate, and severe. The most likely scenario for Bassett Creek was between the moderate and severe scenarios with approximately ten percent of the stream channel suffering from erosion. Similar scenarios were used to estimate the additional loading of phosphorus to Bassett Creek.

The 2000 study results indicated that moderate channel erosion could contribute an additional 1,000,000 pounds of suspended sediments annually (increase from approximately 500,000 pounds to 1,500,000 pounds) and 50 pounds of phosphorus annually (increase from approximately 2,650 pounds to 2,700 pounds) to the Main Stem of Bassett Creek. The study results also showed that stabilizing the Main Stem of Bassett Creek could reduce total phosphorus (TP) loads by an estimated 96 pounds per year and total suspended solids (TSS) loads by an estimated 200,000 pounds per year.

More recent computations completed for this feasibility study show that restoring this reach of the North Branch Bassett Creek could reduce TP loads by an estimated 68 pounds per year and TSS loads by an estimated 119,000 pounds per year.

The BCWMC Watershed Management Plan recognized the need to restore stream reaches damaged by erosion or affected by sedimentation. The BCWMC established a fund to cover the costs of channel stabilization projects. However, the fund as authorized was insufficient to cover the costs of all of the identified projects. In January 2007 the BCWMC's Technical Advisory Committee recommended that the Commission add stream channel restoration projects to the Commission's ten-year CIP. The BCWMC then went through a process to identify potential channel restoration projects by stream reach, prepared cost estimates for the restoration of the reach, prioritized the

restoration projects, and added the larger projects to the CIP. These restoration projects included the Main Stem of Bassett Creek, the North Branch of Bassett Creek, the Sweeney Lake Branch of Bassett Creek, and Plymouth Creek. These reaches of the creek have experienced increased stream bank erosion, streambed aggradation, or scour. These erosion and aggradation processes are a combination of natural processes, and increased runoff volumes and higher peak discharges in these reaches of the creek that occur with urban development in the watershed. The sediment load from the erosion and scour increases phosphorus loads to downstream water bodies, decreases the clarity of water in the stream, destroys aquatic habitat, and reduces the discharge capacity of the channel. The Commission added several of these channel restoration projects to their long range CIP in May of 2007, including North Branch Bassett Creek.

The BCWMC completed a draft Resource Management Plan (RMP) in April 2009 (updated July 2009) for water quality improvement projects within the Bassett Creek watershed scheduled for design and construction between 2010 and 2016. The goal of the RMP was to streamline the permitting process with the U.S. Army Corps of Engineers (USACE) for all of the projects. The RMP provided concept designs for stabilizing the stream banks along this reach of Bassett Creek as well as background information about impacts to wetlands, threatened and endangered species, and cultural and historical resources. The North Branch Bassett Creek was included in the RMP. Relevant information from the RMP is included in this feasibility study.

Table 1 presents the restoration projects included in the RMP, along with their estimated start dates and costs. This reach of North Branch Bassett Creek is included in the Commission's CIP for design and construction in 2011 (the scheduled construction date has changed since completion of the RMP).

Table 1 Channel Restoration Projects added to CIP and included in the RMP

Creek Project	Target Project Start	Estimated Project Cost[1]
Plymouth Creek, Reach 1 (PC-1)	2010	$965,200
Bassett Creek Main Stem, Reach 2	2010	$780,000
Bassett Creek Main Stem, Reach 1	2011	$715,000
North Branch	2013	$660,000
Plymouth Creek, Reach 2 (PC-2)	2015	$559,000

[1] Costs as estimated in revised 2009 CIP

In 2008, the City of Golden Valley completed the Commission's first channel restoration project – the Sweeney Lake Branch, King Hill Area project. This project involved restoration of approximately 600 feet of the upstream end of the Sweeney Lake Branch of Bassett Creek. The Plymouth Creek, Reach 1 and Bassett Creek Main Stem, Reach 2 projects are currently underway.

3.0 Site Characteristics

3.1 Bassett Creek Watershed

The watershed area for the North Branch Bassett Creek is approximately four square miles and drains portions of Plymouth, New Hope, and Crystal. Existing land use includes approximately 28 percent commercial/industrial; 40 percent single-family residential; four percent multi-family residential; seven percent highway; seven percent parks and undeveloped land; and water surface area over the remaining land area.

3.2 Stream Characteristics

The North Branch Bassett Creek project reach (**Figure 2**) extends for approximately 3,000 feet, from 32nd Avenue North to approximately 200 feet west of Douglas Drive, in the City of Crystal. The stream is relatively shallow in most places except for occasional deep pools. The riparian vegetation is a mixture of native and non-native trees and shrubs.

For this feasibility study, Barr staff walked the reach to further investigate the scale and severity of the erosion problems. Barr staff observed the previously documented erosion sites and identified additional erosion sites. The sites added by Barr staff are for the most part minor erosion sites. These sites were added to the feasibility study as it is more cost effective to fix minor repairs before they become severe, particularly if a contractor is under contract and on-site to complete repairs to adjacent sites.

3.3 Site Access

Access for many of the sites on the North Branch Bassett Creek will be more difficult because most of the sites are located on private property. Access to each site will require crossing private property and restoring the property at the end of the project.

3.4 Wetlands

The wetlands associated with the North Branch Bassett Creek project reach were delineated in accordance to the COE Wetland Delineation Manual and Midwest Regional Supplement. The delineation and assessment was necessary to meet the requirements of a Section 404 Permit and the Wetland Conservation Act. The assessment also included the use of the Minnesota Routine Assessment Method (MnRAM 3.0), which is a comprehensive ranking system designed to help qualitatively assess functions and values associated with Minnesota wetlands for the purpose of

managing local wetland resources. Four wetlands totaling approximately 4.6 acres within the study reach were identified and field delineated. These are primarily floodplain forest riparian wetlands which border the North Branch Bassett Creek for the extent of the study area, and are separated by roads. MNRAM functional wetland assessments were also performed; the wetlands generally scored low in many environmental criteria. Final design should avoid or minimize wetland impacts.

A full summary of the wetland delineation, including figures and field data sheets, is in Appendix B.

3.5 Cultural and Historical Resources

A reconnaissance survey of the North Branch Bassett Creek project reach was completed in June 2010 to determine if any sites may require further investigation for cultural or historical importance. The survey was completed by reviewing historical aerial photographs, interviewing local residents, and walking the relevant reaches to observe conditions on the ground.

The survey found no sites with archeological potential that justify additional investigation. The full report of the survey, including figures, is included in Appendix C.

4.0 Potential Improvements

4.1 Description of Potential Improvements

As described in Section 1.2, the project along North Branch Bassett Creek consists of a variety of stream stabilization measures to address erosion problems. **Figure 2** shows the 20 stabilization sites and **Table 2** lists the potential stabilization measures for each site. The following paragraphs describe the potential stream stabilization practices proposed for this reach. There are dozens of stream restoration techniques that can be used, although not all of them would be practicable or applicable to the stream erosion problems on Bassett Creek. The techniques discussed below and included in the conceptual design are among commonly used techniques. Those included in the concept design were selected for their functionality and the expectation that most contractors have had experience with installation of the technique. The final design will determine the most appropriate measures to use at each individual site to meet the objectives of all parties involved. The final design could include techniques not included in these concept designs.

Riprap

Riprap (also called stone toe protection) is used to protect the toe of the stream bank. In-stream riprap typically consists of cobble-sized rock (six inches to 12 inches in diameter). The riprap is keyed in to the streambed and extends up the bank to approximately the bankfull level elevation. The bankfull level is the elevation of the water in the channel during a 1.5-year return frequency runoff event. In some cases, this level may be below the top of the stream bank. Riprap is typically used in conjunction with planting of the upper banks to provide full bank protection. Riprap is especially effective in heavily shaded areas, where it is difficult to establish vegetation. **Figure 3** illustrates this practice.

Cross Vanes

Cross vanes (or constructed riffles) are drop structures, which are typically constructed of boulders and rocks to flatten the slope of the channel and reduce the velocity of the flow in the channel. Cross vanes extend across the creek bottom, and are embedded in each bank. Cross vanes direct the main flow to the center of the stream to reduce bank erosion. **Figure 4** illustrates this practice.

J-Vanes

J-vanes (also called rock vanes) are constructed of boulders embedded into the creek bottom. The vanes are embedded in the stream bank and are oriented upstream to direct the flow away from that

bank. J-vanes typically occupy no more than one-third of the channel width. **Figure 5** illustrates this practice.

Vegetated Reinforced Slope Stabilization (VRSS)

VRSS is a bioengineering method that combines rock, geosynthetics, soil, and plants to stabilize steep, eroding banks. VRSS typically involves protecting layers of soil with a blanket or geotextile material creating "soil lifts" (also called "soil pillows") and planting or seeding native vegetation on the slope. The vegetation's root systems provide the long-term slope stabilization. **Figure 6** illustrates this practice.

Pipe Outlet Stabilization

Pipe outlet stabilization measures vary according to specific site circumstances and problems. At most sites, additional rock riprap is needed at the pipe outlet. In other cases, pipe realignment and/or lowering of the pipe may be needed to correct existing problems, prevent future erosion, and prevent pipe failure. **Figure 7** illustrates this practice.

Biologs

Biologs are natural fiber rolls made from coir fiber that are laid along the toe of the stream bank slope to stabilize the toe of the stream bank. Biologs 10 – 22 inches in diameter are typically used. Because they are made of natural fiber, vegetation can grow on the biologs. When needed, grading of the stream bank slope above the biolog is used to create a more stable slope (2:1 to 3:1). **Figure 8** illustrates this practice.

Live Stakes

Live stakes are dormant stem cuttings, typically willow and dogwood species. They are collected and installed during the dormant season (late fall to early spring) and grow new roots and leaves, quickly and cheaply establishing woody vegetation on a stream bank. The willows and dogwoods grow into stands that provide long lasting bank protection. **Figure 9** illustrates this practice.

Live Fascines

Live fascines also use dormant willow and dogwood cuttings collected and installed during the dormant season. In this case, the cuttings are bundled together and planted in a row parallel to the stream flow. They can be effective in reducing sheet erosion along a slope because a portion of the fascine extends above the ground surface. The willows and dogwoods grow into linear stands of shrubs that provide long lasting bank protection. **Figure 10** illustrates this practice.

Site Grading

In many places, the eroding bank will be graded to a 2:1 or 3:1 slope. This provides a stable slope that will not naturally slough and it provides a surface that is flat enough on which vegetation can be planted or seeded.

Table 2 Potential stabilization measures at each site.

Site #	Station	Potential Stream Stabilization Practices[1]	Photos[2]
1[3]	0+00	Grade banks to 2:1 slope. Install two cross vanes. Install 200 feet biolog. Remove 12 trees.	1
2	2+50	Grade banks to 2:1 slope. Install riprap for toe protection. Remove 12 trees.	2, 3
3	3+50	Grade banks to a 3:1 slope Install three j-vanes. Install 75 feet biolog.	4
4	4+25	Grade left bank to a 2:1 slope. Place removed material below undercut trees. Install riprap on placed material. Install biolog and live stakes on graded bank. Remove six trees.	5
5	6+00	Grade bank to a 3:1 slope. Install one cross vane. Install 150 feet biolog. Remove ten trees.	6
6	7+50	Remove and dispose of failing wall. Grade both banks to 2:1 slope. Install one cross vane. Install 300 feet biolog. Remove 12 trees.	7, 8
7	9+40	Remove 15 trees. Install riprap in front of sanitary manhole. Regrade steep banks to 2:1 slope.	9
8	11+00	Regrade banks to 2:1 slope. Install riprap to protect sanitary manhole. Install two j-vanes. Remove four trees.	10
9[3]	12+00	Clear debris jam.	11
10	13+00	Install riprap to protect sanitary manhole. Install one j-vane. Remove two trees	12
11	15+00	Install fill and riprap to protect sanitary manhole Install two j-vanes. Remove one tree.	13
12	16+60	Install 400 feet biolog. Install shade-tolerant shrubs. Remove three trees.	14
13[3]	18+00	Grade steep bank to 2:1 Install 4 j-vanes. Remove three trees.	15

Site #	Station	Potential Stream Stabilization Practices[1]	Photos[2]
14	19+00	Protect sanitary manhole by pushing stream away from manhole. Install riprap for additional manhole protection. Install four j-vanes. Remove five trees.	16
15	19+50	Remove two trees. Install 60 feet biolog. Install live stakes.	17
16	20+50	Remove eight trees. Install 450 square feet of VRSS. Install two j-vanes	18
17	21+50	Remove disposed grass clippings. Install 100 feet biolog. Install 50 feet live fascines. Plant shrubs and trees to vegetate bank. Remove two trees	19
18[3]	23+50	Remove four trees. Regrade banks to 2:1 slope. Install 2 j-vanes.	20
19	24+00	Remove two trees. Install 200 feet of biolog.	21
20	29+00	Remove 16 trees Install 1,000 square feet of VRSS.	22

[1] All sites will be revegetated with native grasses, shrubs, and trees. The final design phase will determine which practices will be used at each site and may or may not use the practices specified in this table.
[2] Photos are located in Appendix A
[3] Sites added by Barr Engineering

4.2 Project Impacts

4.2.1 Easement Acquisition

Temporary construction easements will be required to complete the stabilization work for this project because most of the identified erosion sites are located on private property. For this study, it was assumed that temporary construction easements will cost approximately $1,000 for each site, for a total of $20,000.

4.2.2 Permits Required for Project

The proposed project will require 1) a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE) and Section 401 certification from the Minnesota Pollution Control Agency (MPCA), 2) compliance with the Minnesota Wetland Conservation Act, and 3) a Public Waters Work Permit from the Minnesota Department of Natural Resources (MNDNR). The proposed project should also follow the MPCA's guidance document for managing dredged materials.

Section 404 Permit

The COE regulates the placement of fill into wetlands, if the wetlands are hydrologically connected to a Waters of the United States, under Section 404 of the Clean Water Act (CWA). In addition, the COE may regulate all proposed wetland alterations if any wetland fill is proposed. The MPCA may be involved in any wetland mitigation requirements as part of the CWA Section 401 water quality certification process for the 404 Permit.

The Bassett Creek project was included in the *Resource Management Plan for Bassett Creek Watershed Management Commission Water Quality Improvement Projects 2010 – 2016* submitted to the COE in April 2009 (revised in July 2009). The goal of the *Resource Management Plan* (RMP) is to complete on a conceptual level the COE permitting process for all of the projects proposed.

The COE 404 permit requires a Section 106 review for historic and cultural resources. The results of the archeological reconnaissance study are included as Appendix C. If more detailed information is requested by the State Historic Preservation Office (SHPO), then a Phase I Archaeological Survey may need to be completed. A Phase I Archaeological Survey can be completed in 45 days or less during the frost-free period. The COE staff anticipates that the 404 permit review and approval process could require 120 days to complete.

Minnesota Wetland Conservation Act

The Wetland Conservation Act (WCA) regulates the filling and draining of wetlands and excavation within Type 3, 4, and 5 wetlands. In addition, the WCA may regulate all types of wetland alteration if any wetland fill is proposed. The WCA is administered by local government units (LGU), which include cities, counties, watershed management organizations, soil and water conservation districts, and townships. Crystal is the LGU for the proposed project site. The Minnesota Board of Water and Soil Resources (BWSR) oversees administration of the WCA statewide.

The proposed project will only involve grading existing stream banks and other stream bank work. This type of work can generally be considered self mitigating and will not require wetland mitigation, but all work requires review by the LGU.

Public Waters Work Permit

The MNDNR regulates projects constructed below the ordinary high water level of public waters or public waters wetlands, which alter the course, current, or cross section of the water body. Public waters regulated by the MNDNR are identified on published public waters inventory (PWI) maps.

Bassett Creek is a public water/water course, so the proposed work will require a MNDNR public waters work permit.

The first few hundred feet of the North Branch Bassett Creek project reach upstream of 32nd Avenue North is a designated County Ditch (CD 18).

4.2.3 Other Project Impacts

Tree Loss

The proposed project includes the removal of approximately 119 trees. All of the trees are located in areas where bank grading or site access will be necessary. A detailed tree inventory should be completed during the final design process. Tree replacement is discussed in Section 4.3.

Water Quality Impacts

The proposed stabilization measures will result in a reduction of the sediment and phosphorus loading to Bassett Creek and all downstream water bodies, including the Mississippi River and Lake Pepin. As discussed in Section 2.1.2, the BCWMC estimated sediment and phosphorus loading to Bassett Creek from channel erosion as part of the *Bassett Creek Main Stem Watershed Management Plan* (2000). The study results also showed that stabilizing the Main Stem of Bassett Creek could reduce total phosphorus (TP) loads by an estimated 96 pounds per year and total suspended solids (TSS) loads by an estimated 200,000 pounds per year.

Also as noted in Section 2.1.2, more recent computations show that restoring this reach of the North Branch Bassett Creek could reduce TP loads by an estimated 68 pounds per year and TSS loads by an estimated 119,000 pounds per year.

4.3 Cost Estimate

The estimated project design and construction cost for the North Branch Bassett Creek restoration project is $834,900. A feasibility-level cost estimate for the project construction is included in **Table 3. Figure 2** shows the corresponding site numbers and stationing referenced in **Table 3**. The following sections explain some of the assumptions that are a part of the cost estimate.

4.3.1 Temporary easements

The costs of obtaining temporary construction easements within the City of Crystal are often negligible; however for the purposes of this cost estimate, it was assumed that construction

easements for each private property would be $1,000. With 20 sites in need of repair, the total cost estimate for temporary construction easements is $20,000 (**Table 3**).

4.3.2 Off-site sediment disposal

The cost estimate includes the costs of testing stream bank material for hazardous compounds that would require them to be treated as dredged materials per MPCA regulations. It is assumed that approximately one half of the excavated material will require special disposal at an estimated costs of $29,100 (**Table 3**).

4.3.3 Wetland mitigation

As discussed in Section 4.2.2, stream bank restoration and repair is considered to be a self-mitigating wetland impact. Stream banks are considered to be wetlands and disturbing the banks as part of a restoration project is a temporary wetland impact. However, because the nature of stream bank repair and restoration is to create a stable bank that can support a riparian ecosystem, the impacts are considered to be self-mitigating. Therefore, stream bank restoration projects do not require an additional cost for wetland mitigation.

4.3.4 Tree replacement

The cost estimate (Section 4.3) assumes that trees will be replaced on a two-to-one (2:1) basis. It also assumes that the replacements will be made at the site where the original trees were removed. Therefore, if five trees are removed at a given site, then ten trees will be planted during site restoration. The two-to-one replacement ratio assumes that over time, there will be some tree loss due to natural causes (storm/wind damage, disease, etc) and natural competition.

4.3.5 Percentages of estimated construction costs

The cost estimate also assumes that 10% of the construction costs will be for mobilization and demobilization. This cost is included in the site subtotal for each site.

4.3.6 Miscellaneous

Most sites include various miscellaneous items that are needed during construction. Such items include a rock construction entrance, a filter dike to control in-stream sediment disturbance, and restoration of access paths. Together, these items total approximately $6,000. Because some sites are close together, a single filter dike can be used to control in-stream sediment from multiple sites. Likewise, a single construction entrance and access path restoration can be used for multiple sites. Therefore, these items were not included in the cost estimate for each site.

The opinion of probable construction costs provided in this report is made on the basis of Barr's experience and qualifications, and represents our best judgment as experienced and qualified professionals familiar with the project. The cost opinion is based on project-related information available to Barr at this time and includes a conceptual-level design of the project.

4.4 Funding Sources

The City of Crystal proposes to use BCWMC capital improvement program (CIP) funds to pay for this project. BCWMC channel restoration projects are funded through the BCWMC's CIP and are paid for via an ad valorem tax levied by Hennepin County over the entire Bassett Creek watershed.

4.5 Project Schedule

The project design and construction work is slated to begin in 2011. The construction work will likely be completed during the winter of 2011—2012. For project design and construction work to occur in 2011, the Commission must hold a public hearing and order the project in time for the Commission's submittal of its 2011 ad valorem tax levy request to Hennepin County by October 1, 2010. If project construction is to occur in fall or winter, it is recommended that the project bidding take place in the summer. This will allow contractors to acquire plants and seeds at a reasonable price for the required quantities. In the intervening time, the City will gather public input, conduct the environmental review, prepare the final design, and obtain permits.

Table 3. Site Locations, Potential Stream Stabilization Practices, and Overall Cost Estimate for Bassett Creek Reach 2

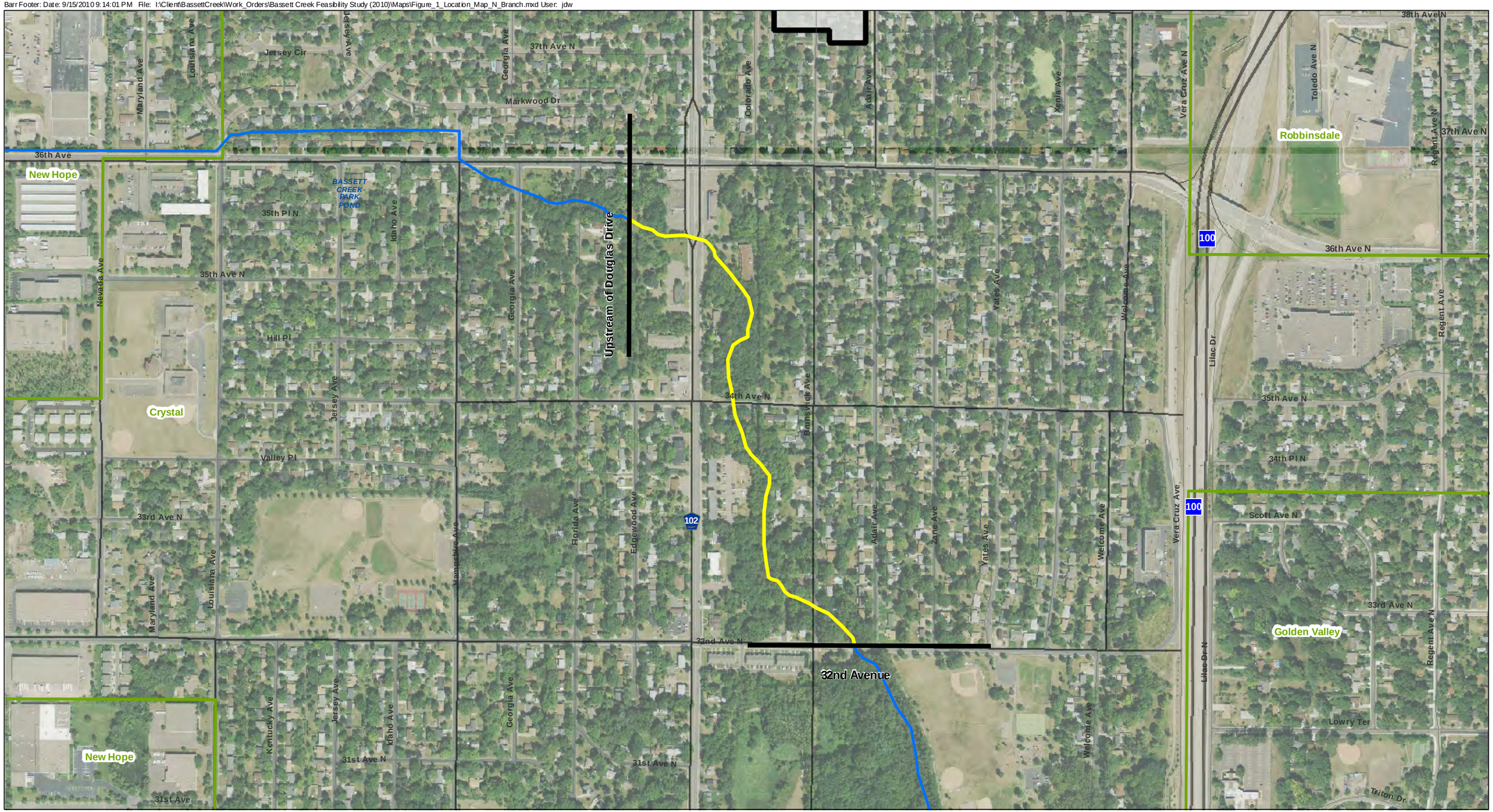
Site #	Downstream station [1]	Site length (feet)	Proposed stream restoration practices	Site Subtotal [2]
1[3]	0+00	200	200' of biolog; remove 12 trees; 2 cross vanes; grade banks to 2:1 slope	$ 52,300
2	2+50	50	Grade banks to 2:1 slope; install riprap; remove 12 trees	$ 24,600
3	3+50	75	Grade banks to 3:1; install riprap; 75' of biolog; seed with native grasses.	$ 17,700
4	4+25	40	Grade bank to 2:1 slope; install riprap; 40' biolog; install live stakes; remove 6 trees	$ 18,700
5	6+00	75	Grade bank to 3:1 slope; 1 cross vane; 150' biolog; remove 10 trees	$ 22,800
6	7+50	150	Grade banks to 2:1 slope; remove failing retaining wall; 1 cross vane; 300' biolog; remove 12 trees	$ 55,200
7	9+40	40	Grade banks to 2:1; remove 15 trees; install riprap in front of sanitary manhole;	$ 25,900
8	11+00	25	Grade banks to 2:1; install riprap to protect sanitary manhole; 2 j-vanes; remove 4 trees.	$ 14,500
9[3]	12+00	20	Clear debris jam	$ 2,400
10	13+00	20	Install riprap to protect sanitary manhole; 1 j-vane; remove 2 trees.	$ 14,700
11	15+00	20	Install riprap to protect sanitary manhole; 2 j-vanes; remove 1 tree.	$ 16,700
12	16+60	200	400' biolog; remove 3 trees; shade-tolerant shrubs	$ 18,400
13[3]	18+00	40	Grade bank to 2:1 slope; 4 j-vanes; remove 3 trees	$ 20,900
14	19+00	30	Slightly re-route stream to protect sanitary manhole; install riprap for manhole protection; 4 j-vanes; remove 5 trees.	$ 28,800
15	19+50	30	60' biolog; live stakes; remove 2 trees	$ 6,900
16	20+50	50	450 square feet of VRSS; 2 j-vanes; remove 8 trees	$ 45,100
17	21+50	50	100' biolog; 50' live fascines; remove grass clippings; revegetate bank; remove 2 trees.	$ 14,500
18[3]	23+50	35	Grade banks to 2:1 slope; 2 j-vanes; remove 4 trees	$ 16,300

Site #	Downstream station [1]	Site length (feet)	Proposed stream restoration practices	Site Subtotal [2]
19	24+00	200	200' biolog; remove 2 trees	$ 9,300
20	29+00	150	1000 square feet of VRSS; remove 16 trees	$ 81,800
			Testing for hazardous materials and off-site disposal	$ 29,100
			Temporary construction easements	$ 20,000
			Subtotal	*$ 556,600*
			Design, Permitting, and Administration (25%)	$ 139,150
			Subtotal	*$ 695,750*
			Construction Contingency (20%)	$ 139,150
			Summation	**$ 834,900**

[1] Stream stationing: 0+00 at 32nd Ave
[2] All sites include restoration seeding and erosion control blanket for disturbed areas, and a 2:1 tree replacement as needed.
[3] Sites added by Barr Engineering

Figures

Barr Footer: Date: 9/15/2010 9:14:01 PM File: I:\Client\BassettCreek\Work_Orders\Bassett Creek Feasibility Study (2010)\Maps\Figure_1_Location_Map_N_Branch.mxd User: jdw



Bassett Creek Watershed Management Commission
www.bassettcreekwmo.org

500 250 0 500 Feet

N W E S

Legend

- North Branch Study Area
- North Branch Bassett Creek
- Municipal Boundaries

NORTH BRANCH BASSETT CREEK

Figure 1
North Branch Bassett Creek Restoration Project
Bassett Creek Watershed Management Commission
September 2010

Site 20
1000 sq ft VRSS
Remove 16 trees

Site 19
200 ft biolog
Remove 2 trees

Site 18
Grade banks to 2:1 slope
2 j-vanes
Remove 4 trees

Site 17
100 ft biolog
50 ft live fascines
150 live stakes
Remove grass clippings
Remove 2 trees

Site 16
450 sq ft of VRSS
2 j-vanes
Remove 8 trees

Site 15
60 ft biolog
75 live stakes
Remove 2 trees

Site 14
Slightly re-route stream to protect sanitary manhole
4 j-vanes
Remove 5 trees

Site 13
Grade banks to 2:1 slope
4 j-vanes
Remove 3 trees

Site 12
400 ft biolog
200 live stakes
Remove 3 trees

Site 11
Install riprap to protect sanitary manhole
2 j-vanes
Remove 1 tree

Site 10
Install riprap to protect sanitary manhole
1 j-vane
Remove 2 trees

Site 9
Clear debris jam

Site 8
Grade banks to 2:1 slope
Install riprap to protect sanitary manhole
2 cross vanes
Remove 4 trees

Site 7
Grade banks to 2:1 slope
Install riprap in front of sanitary manhole
Remove 15 trees

Site 6
Grade banks to 2:1 slope
Remove failing retaining wall
1 cross vane
300 ft of biolog
Remove 12 trees

Site 5
Grade banks to 3:1 slope
1 cross vane
150' biolog
50 live stakes
Remove 10 trees

Site 4
Grade banks to 2:1 slope
Install riprap for toe protection
40 ft of biolog
25 Live stakes
Remove 6 trees

Site 3
Grade banks to 3:1 slope
Install riprap for toe protection
75 ft of biolog

Site 2
Grade banks to 2:1 slope
Install riprap for toe protection
Remove 12 trees

Site 1
200 ft biolog
2 cross vanes
200 live stakes
Grade banks to 2:1 slope
Remove 12 trees

Bassett Creek Watershed Management Commission
www.bassettcreekwmo.org

300 150 0 300 Feet

Legend
- Study Sites
- Sanitary Sewers
- North Branch Bassett Creek

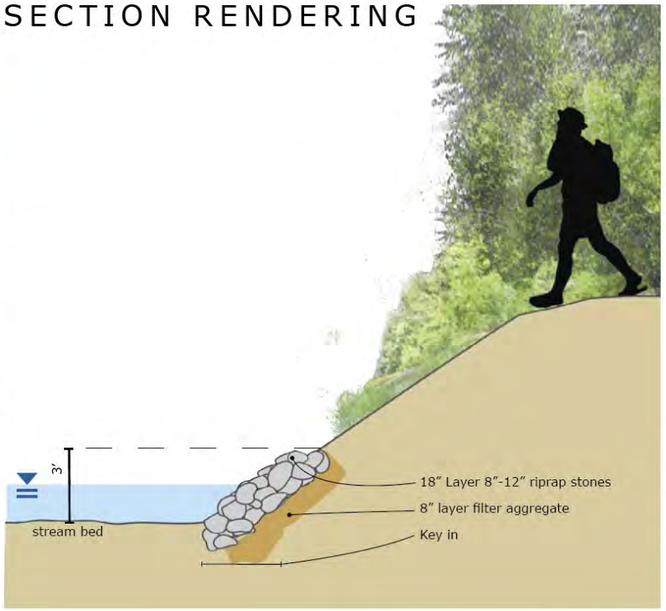
EROSION SITES AND STATIONING

Figure 2
North Branch Bassett Creek Restoration Project
Bassett Creek Watershed Management Commission
September 2010

Stream Stabilization Plan

Stone Toe Protection is constructed from cobble-sized rock on the creek edges. It extends to approximately the bankfull level, which will protect the channel banks for flow events that occur every 1 to 2 years or less. The material will extend into the ground to resist scour. Coarse gravel is used to separate the larger rock material from underlying soil. Stone toe protection is typically used in conjunction with revegetation of the upper banks.

SECTION RENDERING



SIMILAR PROJECTS

Stone toe protection has been used extensively in Nine Mile Creek's Lower Valley, in conjunction with deflector dikes, grade control measures and stabilization of large bank failures. Following the 1987 "super storm," the proposed design allowed the stream to continue its course while taking measures to protect areas where water flow was eroding valley walls. The resulting measures have stabilized the stream channel and valley walls while blending seamlessly with the natural environment.

MATERIALS

Materials will consist of cobble-sized material with coarse gravel filter layer to provide separation from the underlying soil. Natural fieldstone material will be used.

EXISTING CONDITIONS

Fluvial bank erosion is caused by water in the stream moving past the streambanks. The shear stress caused by the flow entrains soil particles into the flow, causing the stream bank to erode away. This is the most common type of erosion that occurs in streams. Virtually all streams experience this type of erosion as their flow path evolves over time. However, the rate of fluvial bank erosion can increase when the stream is out of equilibrium with its watershed. Increased flow from a watershed will increase the rate of fluvial bank erosion. In many cases, it appears to be a part of the natural process of stream evolution. In places where the channel is confined by the valley walls, however, fluvial bank erosion can lead to failure of the high banks. It can also undermine storm sewer inlets.

Stone Toe Protection

Bank Protection

BARR

Figure 3

Stream Stabilization Plan

Grade control measures are used where channel downcutting has occurred. Various types of weirs are commonly used to provide grade control on streams, particularly in steeper systems. Weirs can be constructed of sheetpile, concrete, or natural materials such as rock. In most cases, natural rock is used to emulate natural riffles. Large boulders would comprise the core of the structure, with smaller rock material placed on the upstream and downstream sides of the boulders to provide a gradual transition to the channel.

The riffles will serve to raise the surface of the water profile, and will reconnect the stream to its floodplain areas. Following the installation of the riffles, pools will be created upstream of the riffles. However, these pools will fill with sediment over time, which will in effect raise the channel bottom to the desired elevation.

MATERIALS

Materials will consist of various gradations of rock, ranging from large, 3-foot boulders to coarse gravel.

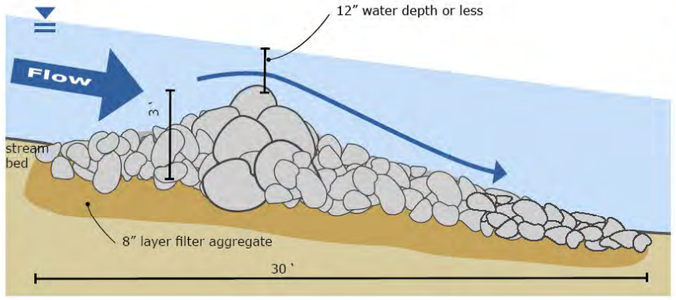
SIMILAR PROJECTS

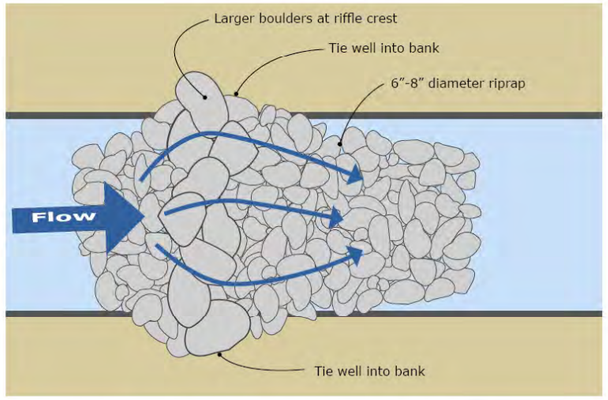
Following the 1987 "super storm," a rapids was constructed on Nine Mile Creek downstream of the 106th Street Bridge. The rapids was one of several grade-control structures that were installed on a three-mile stretch of creek in the lower valley. The proposal allowed the stream to continue its course while taking measures to protect areas where water flow was eroding valley walls. Protection measures included applying porous deflector dikes, burying sheetpile walls parallel to the creek to prevent undercutting of slopes, installing weirs (rock or capped sheetpile) to limit stream-bed degradation, and improving storm-sewer outlets.

EXISTING CONDITIONS

Channel incision occurs when there is an imbalance between the sediment supply and the sediment carrying capacity of the stream. Erosion will occur when the sediment carrying capacity of a stream exceeds the sediment supply. In streams with cohesive banks and steep channel slope, the erosion will first occur primarily on the channel bottom because that is where the erosive forces are the strongest. As the channel deepens, the stream will gradually become wider as the banks eventually fail. The stream will gradually return to equilibrium; however, the process can take many years and significant amounts of erosion will occur during the process.

SECTION/PLAN RENDERING





Constructed Riffle

Grade Control

BARR

Figure 4

Stream Stabilization Plan

Rock vanes are constructed from boulders on the creek bottom. They function by diverting channel flow toward the center and away from the bank. They are typically oriented in the upstream direction and occupy no more than one third of the channel width. Vanes are largely submerged and inconspicuous. The rocks are chosen such that they will be large enough to resist movement during flood flows or by vandalism, with additional smaller rock material to add stability. Rock vanes function in much the same way as root wads in that they push the stream thalweg (zone of highest velocity) away from the outside bend. They also promote sedimentation behind the vane, which adds to the toe protection.

Vanes can also be constructed from both banks, forming an upstream-pointing "V." In this configuration, the vane protects both banks and also provides grade control.

MATERIALS

Materials will consist of various gradations of rock, ranging from large, 3-foot boulders to coarse gravel.

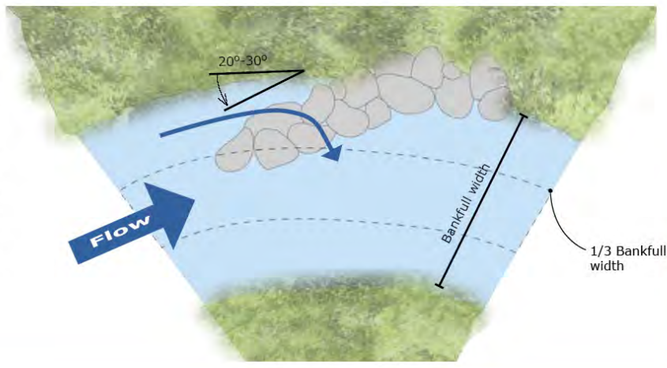
SIMILAR PROJECTS

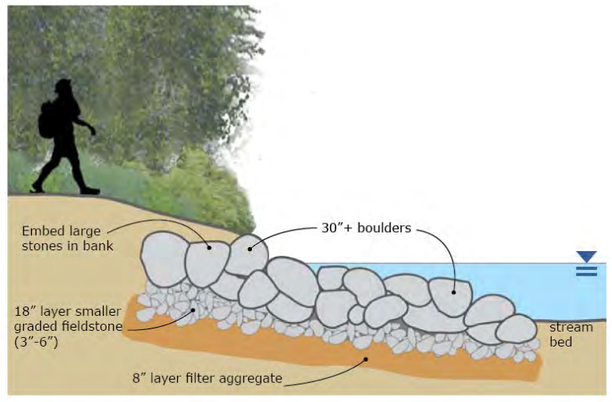
Here is an example of a stabilization project designed for a 1,000-foot long, 20-foot high streambank that was severely eroded. The channel was directed away from the bank toe by installing six rock vanes. The bank was planted with native vegetation and protected with erosion control blanket, while the terrace above the bank was graded to redirect surface runoff to a less vulnerable area. The restored streambank withstood significant flooding during 2001, and has become nicely vegetated (see picture above).

EXISTING CONDITIONS

Fluvial bank erosion is caused by water in the stream moving past the streambanks. The shear stress caused by the flow entrains soil particles into the flow, causing the stream bank to erode away. This is the most common type of erosion that occurs in streams. Virtually all streams experience this type of erosion as their flow path evolves over time. However, the rate of fluvial bank erosion can increase when the stream is out of equilibrium with its watershed. Increased flow from a watershed will increase the rate of fluvial bank erosion. In places where the channel is confined by the valley walls, however, fluvial bank erosion can lead to failure of the high banks. It can also undermine storm sewer inlets.

PLAN/SECTION RENDERING





Rock Vanes

Bank Protection

BARR

Figure 5

Stream Stabilization Plan

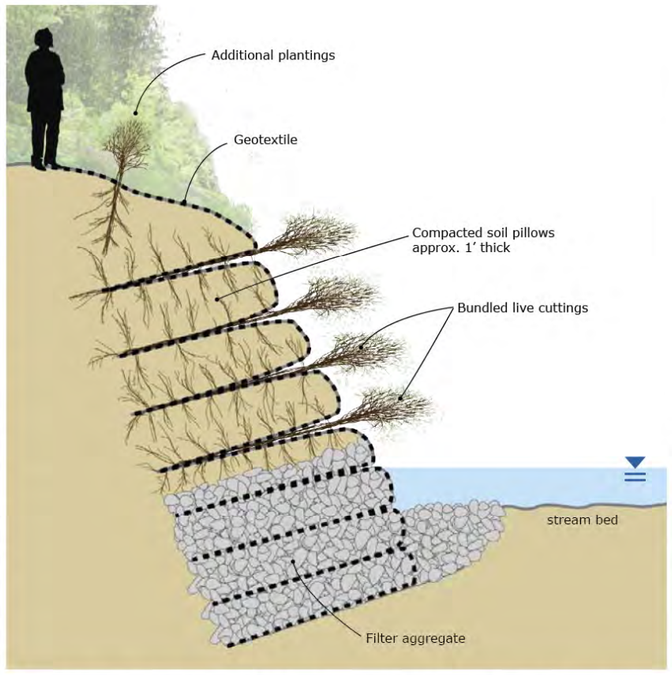
EXISTING CONDITIONS

Fluvial bank erosion is caused by water in the stream moving past the streambanks. The shear stress caused by the flow entrains soil particles into the flow, causing the stream bank to erode away. This is the most common type of erosion that occurs in streams.

Virtually all streams experience this type of erosion as their flow path evolves over time. However, the rate of fluvial bank erosion can increase when the stream is out of equilibrium with its watershed. Increased flow from a watershed will increase the rate of fluvial bank erosion.

Soil Pillows are utilized in a bioengineering method known as Vegetated Reinforced Slope Stabilization (VRSS). The method combines rock, geosynthetics, soil and plants to stabilize steep, eroding slopes in a structurally sound manner. VRSS typically involves protecting layers of soils with a blanket or geotextile material (e.g. erosion control blanket) and vegetating the slope by either planting selected species (often willow or dogwood species) between the soil layers or by seeding the soil with desired species before it is covered by the protective material. In either case, with adequate light and moisture, the vegetation grows quickly and provides significant root structure to strengthen the bank. This method tends to be labor intensive and, therefore, relatively expensive.

SECTION RENDERING



In places where the channel is confined by the steep valley walls, however, fluvial bank erosion can lead to failure of the high banks. It can also undermine storm sewer inlets.

For sites where groundwater seepage is a problem and where it is desirable to maintain steep banks, soil pillows are a feasible solution.

SIMILAR PROJECTS

The Mill Creek Restoration Project utilized soil bioengineering design to stabilize 175 linear feet of severely eroding streambanks within the Caldwell Recreation Park in southeastern Ohio. The work included two 25-foot vegetated reinforced soil slope (VRSS) sections, two 50-foot fill bank sections protected with woven coir and direct woody plantings, and a 12.5-foot tie-in on the upstream and downstream end of streambank work area.

MATERIALS

Materials consist of graded rock for the lower layers of the structure and for internal drainage, if necessary. Geotextile fabric is used to wrap the soil. Plants, such as willow or dogwood, or seed mixture is used for planting in and between the soil pillows.

Soil Pillows

Bank Protection

BARR

Figure 6

Stream Stabilization Plan

Culvert Stabilization is somewhat unique to each situation, depending on the site circumstances. Most sites require additional rock placement with a granular filter layer (rather than filter fabric). Some cases may require re-alignment and/or lowering of the outlet to better align with the stream channel. Typically, outlets should be aligned in the downstream channel direction so that flow doesn't impinge on the opposite bank. It is usually desireable for the culvert to enter the stream at or just above the normal water level in order to minimze the potential for undercutting.

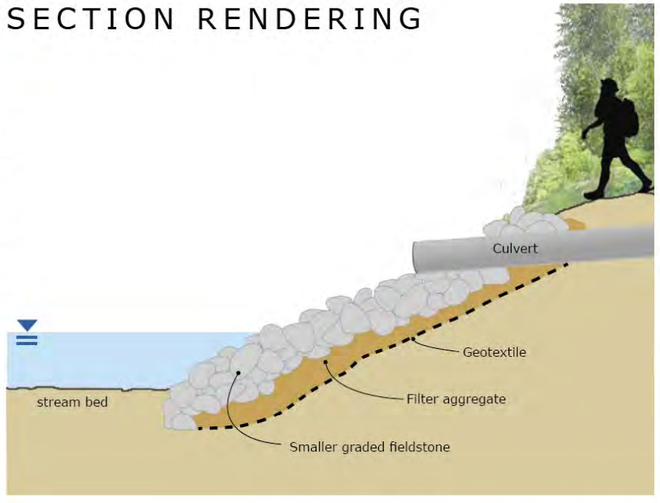
SIMILAR PROJECTS

There are many culvert stabilization designs used on various streams and rivers. Because they are often small projects, the work is often performed by local municipalities or completed as part of a larger project.

EXISTING CONDITIONS

Erosion is frequently observed at culvert outlets for a variety of reasons, including insufficient erosion protection at the culvert outlet, streambank erosion, and channel downcutting, which leaves the culvert perched above the channel. Filter fabric is often used at culvert outlets to separate riprap protection from underlying soils, however the fabric provides a slippery surface for the riprap, which commonly slides into the channel.

SECTION RENDERING



MATERIALS

Materials consist of rock materials ranging from graded riprap (either fieldstone, or, for steep slopes, angular) and granular filter material (typically coarse gravel). If necessary, additional pipe, manholes and end sections may be necessary.

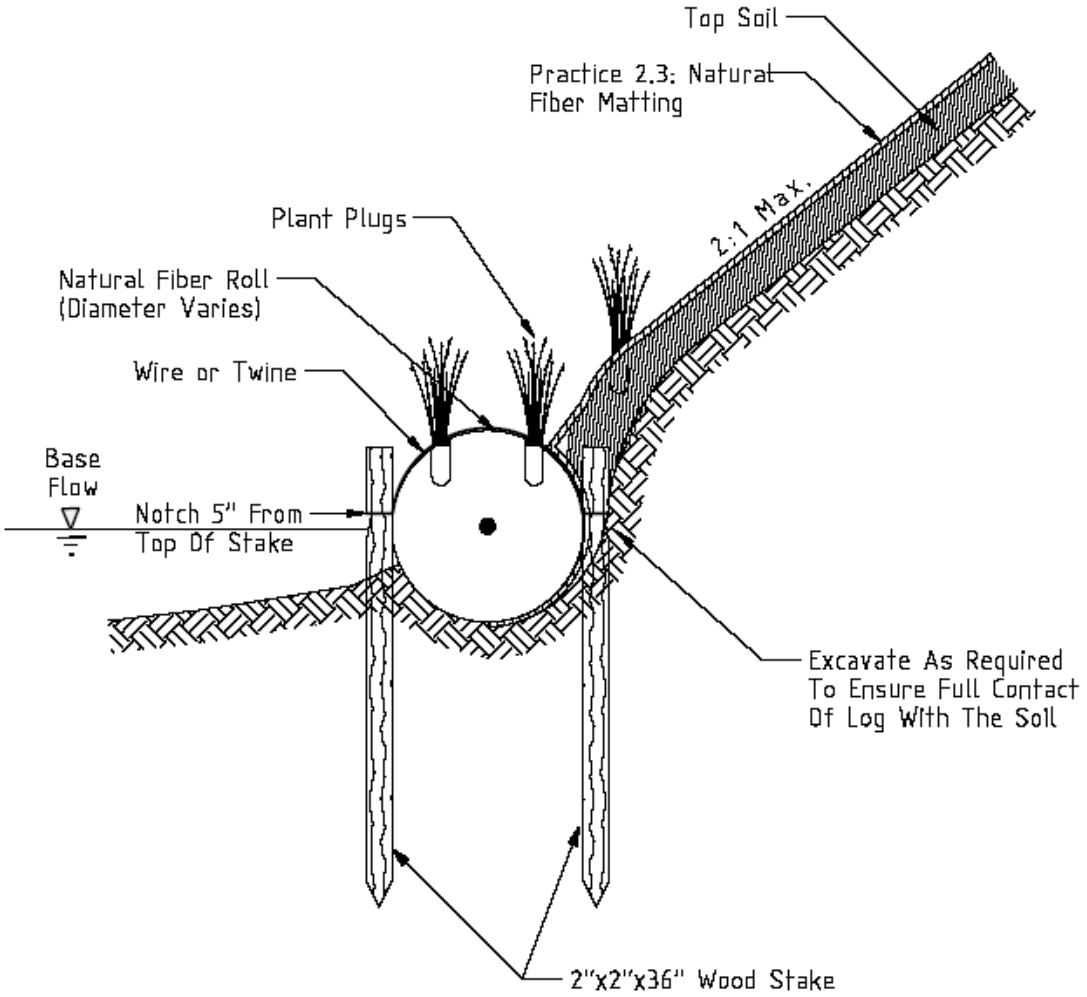


Culvert Stabilization

Bank Protection

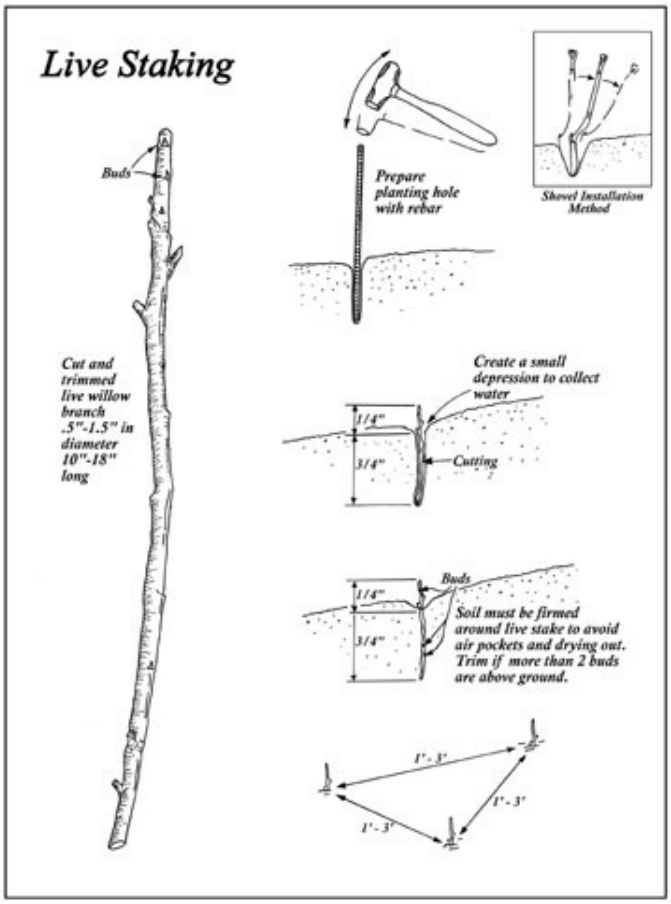
BARR

Figure 7



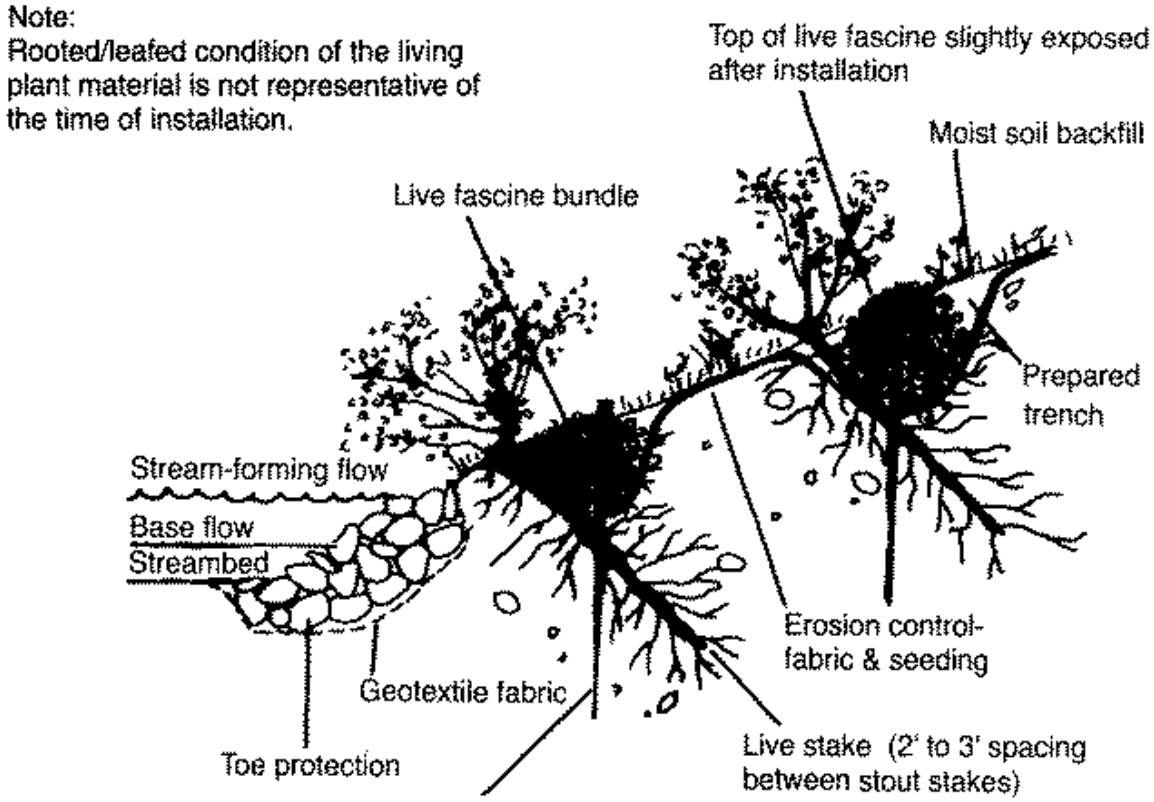
Source:
The Virginia Stream Restoration & Stabilization Best Management Practices Guide

Figure 8
Biologs Bank Protection
North Branch Bassett Creek Restoration Project
Bassett Creek Watershed Management Commission



Source: http://www.sf.adfg.state.ak.us/SARR/restoration/techniques/livestake.cfm

Figure 9
Live Stakes for Bank Protection
North Branch Bassett Creek Restoration Project
Bassett Creek Watershed Management Commission



Source: http://www.dnr.state.oh.us/water/pubs/fs_st/stfs14/tabid/4169/Default.aspx

Figure 10
Live Fascines for Bank Protection
North Branch Bassett Creek Restoration Project
Bassett Creek Watershed Management Commission

Appendices

Appendix A

2010 Site Photos

Photo 1. *Site 1*. Looking upstream at both banks.

Photo 2. *Site 2*. Moderate erosion.

Photo 3. *Site 2*. Severely eroding bank.

Photo 4. *Site 3*. Moderately eroding bank

Photo 5. *Site 4*. Erosion being curtailed by tree roots.

Photo 6. *Site 5*. Moderate to severe erosion.

Photo 7. *Site 6*. Banks being held by failing wall.

Photo 8. *Site 6*. Opposite bank without wall.

Photo 9. *Site 7.* Moderate erosion.

Photo 10. *Site 8*. Moderate erosion

Photo 11. *Site 9*. Debris jam.

Photo 12. *Site 10*. Manhole in need of additional support and protection.

Photo 13. *Site 11*. Exposed manhole.

Photo 14. *Site 12*. Moderate erosion.

Photo 15. *Site 13*. Scarp formation with severe erosion

Photo 16. *Site 14.* Exposed manhole at outside of stream bend.

Photo 17. *Site 15.* Minor bank erosion with undercut trees.

Photo 18. *Site 16* Fallen tree with large scarp in background.

Photo 19. *Site 17.* Steep bank with some litter and soil present.

Photo 20. *Site 18.* Moderate erosion with undercut trees.

Photo 21. *Site 19.* Steep bank with erosion present.

Photo 22. *Site 20.* Minor bank erosion with undercut trees.

Appendix B

Wetland Delineation

North Branch Bassett Creek Wetland Delineation Report for the Bassett Creek Feasibility Study

Bassett Creek Stream Restoration Project City of Crystal, MN

Prepared for
Bassett Creek Watershed Management Commission

August 2010

BARR

4700 West 77th Street
Minneapolis, MN 55435-4803
Phone: (952) 832-2600
Fax: (952) 832-2601

North Branch Bassett Creek
Wetland Delineation Report
Bassett Creek Feasibility Study
Bassett Creek Watershed Management Commission
City of Crystal, MN
August, 2010

Table of Contents

List of Figures

List of Appendices

1.0 Introduction

Barr Engineering Company (Barr) has completed the delineation and mapping of wetlands within the North Branch of Bassett Creek (North Branch) study area in accordance with the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (1987 Edition) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (2008). The study area is located within Sections 20 and 21, Township 118N, Range 21W, in the City of Crystal, in Hennepin County, Minnesota. A location map is provided in Figure B-1. The extent of delineation and mapping includes a one-mile reach of North Branch which flows in a generally southeasterly direction and is bounded to the north by 36th Avenue and to the south by Bassett Creek Pond. Figure B-2 provides aerial photography that covers the entire area where wetlands were delineated. Barr Engineering identified and delineated nine hydrologically-connected wetlands within the bounds described above.

The extent of the restoration area is smaller than the area included in the delineation. The restoration area includes North Branch Bassett Cree between 32nd Avenue North and approximately 200 feet upstream of Douglas Drive. The delineation results for the restoration area are included in the discussion and summation of wetlands in this report. Barr Engineering identified and delineated five hydrologically-connected wetlands within the restoration area. Details of the delineation methodology and wetland descriptions are reflected in later sections of this report.

Section 404 Permit

The proposed Bassett Creek Stream Restoration Project will require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE). Under Section 404 of the Clean Water Act (CWA), the COE regulates the placement of fill into wetlands, if the wetlands are hydrologically linked to a water of the United States. North Branch of Bassett Creek is directly connected to the Mississippi River, a water of the United States. Additionally, the MPCA will likely be involved in any wetland mitigation requirements as part of the CWA Section 401 water quality certification process for the 404 Permit.

Minnesota Wetland Conservation Act

The Wetland Conservation Act (WCA) regulates the filling and draining of wetlands and excavation within Type 3, 4, and 5 wetlands. In addition, the WCA may regulate all types of wetland alteration if any wetland fill is proposed. The WCA is administered by local government units (LGU), which include: cities, counties, watershed management organizations, soil and water conservation districts, and townships. The City of Crystal is the LGU for the proposed project site. The Minnesota Board of Water and Soil Resources (BWSR) oversees administration of the WCA statewide.

2.0 General Environmental Setting

The following sections describes mapped and documented data on the North Branch study area, including hydrology, available land cover data, and mapped soil units, and mapped wetland community information.

2.1 Hydrology

The North Branch is one of several branches of Bassett Creek which make up the ±25,000 acre Bassett Creek Watershed. The North Branch is a small, winding, shallow stream located in a suburban-urban setting and drains portions of the cities of Plymouth, New Hope, Crystal, and Golden Valley. It begins in the City of Plymouth at the Bassett Creek Watershed boundary and flows in a southeasterly direction before flowing through Bassett Creek Pond and connecting with the north-flowing Main Stem of Bassett Creek just upstream of Highway 100. From there, Bassett Creek flows southeast towards the City of Minneapolis where it discharges into the Mississippi River.

The topography at 36th Avenue is 880 feet above mean sea level (AMSL). The elevation gradually decreases to 846 feet (AMSL) where it discharges into Bassett Creek Pond. A 2-foot contour topographic map and USGS Quadrangle map are included as Figures B-3a, B-3b, and B-4, respectively.

2.2 Land Use/Land Cover

The one-mile extent of North Branch of Bassett Creek occurs in medium and high-density single-family residential areas of Crystal. Other land uses surrounding North Branch include multi-family residential, retail commercial, and community park. The stream crosses numerous residential streets and county highways and is typically abutted by the backyards of residential housing. Generally, a forested vegetation buffer is in place, but occasionally, cleared landscaped yards directly abut the stream edge. Available land cover data is presented in Figure B-5. Representative photographs of the land cover around North Branch are attached in Appendix B-1.

2.3 Soils

According to the United States Department of Agriculture Natural Resources Conservation Service Soil Data Mart for Hennepin County, there are two major soil classifications that occur within the study area, which are depicted in Figure B-6 and are described below.

U1A - URBAN LAND-UDORTHENTS, WET SUBSTRATUM, COMPLEX, 0 TO 2 PERCENT SLOPES

Component: Urban land (80%)

The Urban land component is mainly commercial, industrial or residental areas with 65 to 100 percent of the map unit covered by impervious surfaces. The majority of the area was originally occupied by wet depressional soils, mineral or organic.

Component: Udorthents, wet substratum (20%)

The Udorthents, wet substratum component is comprised of fill material placed in wet depressional areas to match the adjoining upland landscape. Because of the variability of the components in this map unit, interpretations for specific uses are not available and onsite investigation is needed.

U2A - UDORTHENTS, WET SUBSTRATUM, 0 TO 2 PERCENT SLOPES

The Udorthents, wet substratum component is comprised of fill material placed in wet depressional areas to match the adjoining upland landscape. Because of the variability of the components in this map unit, interpretations for specific uses are not available and onsite investigation is needed.

2.4 National Wetlands Inventory

United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) database was consulted for the presence of wetlands within the study area. According to NWI data, which was mapped in the 1980s in the State of Minnesota, several wetlands occur within the study area, including forested, emergent, and open water wetlands. The mapped NWI wetlands align somewhat with actual site conditions, but often over or under-estimate actual wetland extent. Below are the descriptions for the Cowardin (1979) classification codes, as shown in Figure B-7.

PFO1/EMCd - Palustrine forested, broad-leaved deciduous/Emergent, seasonally flooded, partially drained or ditched

PFO1C - Palustrine forested, broad-leaved deciduous, seasonally flooded

PEMCd - Palustrine emergent, seasonally flooded, partially drained or ditched

PUBGx - Palustrine, unconsolidated bottom, intermittently exposed, excavated

PUBGd - Palustrine, unconsolidated bottom, intermittently exposed, partially drained or ditched

PUBF - Palustrine, unconsolidated bottom, semi-permanently flooded

2.5 Public Waters Inventory

The DNR Public Waters Inventory (PWI; a.k.a. Protected Waters Inventory) database was consulted for the presence of wetlands or other surface waters in or near the study area receiving statutory protection. The North Branch of Bassett Creek is a PWI Watercourse. West of Brunswick Ave. (Figure B-1), North Branch is designated as a PWI Natural Watercourse. East of Brunswick Avenue, it is designated as a PWI Altered Natural Watercourse. In addition, a Public Water, Unnamed (27-646 P) occurs at the south end of North Branch, to include Bassett Creek Pond. A portion of the southern extent of the study area and delineated wetland occurs within the limits of this Public Water (Figure B-7).

3.0 Wetland Delineation

3.1 Wetland Delineation and Classification Methods

This assessment was designed to evaluate the ecological conditions and characteristics of the study area to identify wetlands and other surface waters that may be claimed as jurisdictional by federal and/or state agencies. The study area included all areas 75 feet from both sides of the stream centerline. All wetlands and surface waters wholly or partially within this study area were delineated. Wetlands that entirely occur outside of the study area were not delineated.

Before field investigations, desk-top preliminary data was collected and reviewed. National Wetlands Inventory mapping is a useful off-site tool in identifying the possible presence of wetlands. Other data available included aerial photography, topographical data, and soils data. Field investigations were conducted on June 9 and July 8, 2010 by Barr to identify and delineate jurisdictional wetland boundaries on the property.

The delineation was conducted according to the Routine On-Site Determination Method specified in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (1987 Edition) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (2008). North Branch, from 36th Avenue to Bassett Creek Pond was traversed on foot and field delineated.

In determining the jurisdictional wetland boundaries, the three jurisdictional wetland qualifiers, wetland hydrology, hydrophytic vegetation, and hydric soils were examined as evidence of wetland presence or absence. Wetlands and adjacent upland data on hydrology, vegetation, and soils were recorded in *Wetland Determination Data Form – Midwest Region* data sheets, which are included in Appendix B-1. Because the wetlands are relatively homogeneous, data points were completed for only a few representative wetlands. The wetland boundaries were recorded using a Trimble Global Positioning System with sub-meter accuracy. The wetland boundaries were then mapped using ArcMap 9.0 Geographic Information System software. Photo documentation of typical wetlands encountered along North Branch is provided in Appendix B-2.

Soil profiles were excavated with the use of a Dutch auger, typically up to a depth of 24 inches below the ground surface or when definitive hydric soil indicators were encountered. The soil sample points reported in Appendix B-2 were located close to the water-ward extent of the wetland line, for the

wetland data point, and close to the land-ward extent of the wetland line for the upland data point. The soil profiles from each boring were examined for hydric soil indicators according to the *Pocket Guide to Hydric Soil Field Indicators* (Wetland Training Institute 2004). Soil colors were determined with the aid of a Munsell® soil color chart. Soil textures were determined by feel. The hydrologic conditions within the immediate vicinity of each soil boring were documented.

Vegetative plots were established for herbaceous layers, and when possible, in a nested fashion with shrub and tree layers, within each wetland and adjacent upland data point. The plant species at each sample location were identified and their wetland indicator status (for Region 3) was noted (Reed 1988; USDA 2010). Efforts were made to meet the Army Corps Delineation Manual plot size requirements for each stratum, but due to wetland shape and size and steep site topography, rectangular plots were often created, but still covered a suitable percentage of wetland area. Dominant species were determined by use of the 50/20 rule.

The delineated wetlands habitat types were classified using the U.S. Fish and Wildlife Service Circular 39 System (U.S. Fish and Wildlife 1956) and the U.S. Fish and Wildlife Service Cowardin System (Cowardin *et al*. 1979).

3.2 Delineation Results

With few exceptions, the entire one-mile stretch of the North Branch study area is abutted by riparian wetlands. The wetlands contiguous to, and which include, the North Branch stream channel are in most cases are floodplain forested wetlands, best described as Type 1 "Seasonally flooded basins or flats" under the Circular 39 System or PFO1A "palustrine forested, broad-leaved deciduous, temporarily flooded" under the Cowardin System. The individual wetland polygons are an artificial product of one contiguous wetland system becoming separated by roadways. These wetlands remain hydrologically connected by large under-road culverts. The four wetlands encountered and delineated in the North Branch restoration area total ±4.6 acres. Although all wetlands in the study area occur in conjunction with North Branch, hydrologic indicators were not always encountered, even close to the stream channel. However, in most cases, secondary hydrologic indicators were present, such as floodplain geomorphic setting and the FAC-neutral test. The wetland delineation results are presented in Figures 8 and 9.

Except where noted, the vegetation is similar in all wetland areas. Box elder is the most common species in the canopy. Large cottonwood trees are also common and scattered throughout. Other typical canopy species include American elm, silver maple, and green ash. In the shrub layer,

buckthorn can be problematic, often occurring in high densities. Other shrubby vegetation largely consists of young forest canopy species listed above, along with occasional red-osier dogwood, black willow, sumac, mulberry, and elderberry. The ground cover under dense forest canopy is often dominated by jewelweed, stinging nettle, American horehound, and Virginia creeper. In more open areas, the ground cover consists of reed canary grass, garlic mustard, bird's foot trefoil, giant goldenrod, and Canada goldenrod.

As described above, a total of nine wetlands were delineated in the study area, but only five wetlands are present within the restoration area. The following sections describe all nine wetlands in the study area in additional detail. Only wetlands D, E, F, G, and H are located within the restoration area

3.2.1 Wetland A (±0.11 acres)

Wetland A is located at the northernmost extent of the North Branch study area. It is a depressional system, surrounded by fill placed for housing and 36th Ave. construction. Vegetation is a largely herbaceous wet meadow (Type 2), with reed canary grass dominating, surrounded by a fringe of black willow.

3.2.2 Wetland B (±0.05 acres)

Wetland B is a small depressional wetland created incidentally from the drainage caused by surrounding fill placed for housing and road construction. Unlike other wetlands delineated along North Branch, Wetland B is not directly connected to Bassett Creek, except during high rainfall events.

Wetland and upland data points were recorded in Wetland B (SB1 and SB2 in Appendix B-2), as shown on Figure B-8. Wetland B is a herbaceous wet meadow (Type 2; PEMB), dominated by reed canary grass. Speckled alder surrounds the wetland edge. Soils are 10YR 2/1 in color to a depth of 8 inches, with 25-50% redoximorphic features from 8-24 inches; sandy clay loam in texture; and meets the Redox Dark Surface hydric soil criteria. Wetland B met the secondary hydrologic indicators of observed drainage patterns, geomorphic position, and passing the FAC-neutral test.

3.2.3 Wetland C (±0.33 acres)

Wetland C is a narrow floodplain forest, surrounded by residential housing to the north and high topographic relief to the south.

3.2.4 Wetland D (±0.16 acres)

Wetland D is as explained above for Wetland C.

3.2.5 Wetland E (±0.03 acres)

Wetland E is a small turn in the creek surrounded by roads, driveway, and parking lot. It receives additional stormwater drainage from a field to the northeast. It is mainly dominated by common buckthorn and box elder.

3.2.6 Wetland F (±0.73 acres)

Wetland F is a long and winding, unbroken stretch of riparian floodplain forest. It is surrounded by single-family and multi-family residential housing occurring at often abrupt higher topography than the wetland and stream channel.

3.2.7 Wetland G (±3.23 acres)

Most of Wetland G can be described similarly as Wetland F. At the southern end of Wetland G, the topography flattens out, allowing for broader wetland expanse. However, in some areas, common buckthorn is dense, to the exclusion of a ground cover layer. Where openings exist, typical wetland grasses and forbs occur. Elsewhere, typical forest canopy of box elder is noted.

A wetland only data point was recorded here (SB4 in Appendix B-2), as shown on Figure B-9. Wetland G is a floodplain forest (Type 1; PFO1), dominated by box elder and common buckthorn. Soils are 10YR 2/1 in color to a depth of 14 inches, with 1% redoximorphic features; the texture is loam; and meets the Thick Dark Surface hydric soil criteria. Wetland G secondary hydrologic indicators met include geomorphic position and the FAC-neutral test.

3.2.8 Wetland H (±0.43 acres)

Wetland H is turn in the stream channel surrounded by roadways and residential housing.

A wetland only data point was recorded here (SB3 in Appendix B-2), as shown on Figure B-9. Wetland H is a floodplain forest (Type 1; PFO1), dominated by box elder and green ash, with a ground cover of dense garlic mustard. Soils are 10YR 2/2 in color to a depth of 24 inches, with 10-20% redoximorphic features; the texture is sandy clay loam; and meets the Redox Dark Surface hydric soil criteria. Wetland H exhibited geomorphic position and passed the FAC-neutral test as secondary hydrologic indicators.

3.2.9 Wetland I (±4.52 acres)

Wetland I is a higher-quality wetland system within Bassett Creek Park. Like the other wetlands, it is bounded by higher topography to the west and east. Additional stormwater drainage is received offsite at the northern extent of wetland. Wetland I marks the southerly extent of North Branch, where it discharges into Bassett Creek pond. The southerly end of Wetland I is herbaceous and shrubby marsh land, dominated by cattail and black willow.

Wetland and upland data points were recorded here (SB5 and SB6 in Appendix B-2), as shown on Figure B-9. Wetland I is a floodplain forest (Type 1; PFO1A), dominated by box elder, with a ground cover of garlic mustard. Soils are 10YR 2/1 in color to a depth of 13 inches, with 10% redoximorphic features; the texture is loam and sandy clay; and meets the Thick Dark Surface hydric soil criteria. Wetland H exhibited drift deposits as a primary indicator of hydrology.

4.0 MNRAM Assessment

The Minnesota Routine Assessment Method (MnRAM 3.0) is a comprehensive ranking system designed to help qualitatively assess functions and values associated with Minnesota wetlands for the purpose of managing local wetland resources. Full methodology guidance is available online (BWSR 2009). Some of the criteria evaluated and numerically ranked include vegetative diversity, water quality, fish and wildlife habitat, recreational value, and restoration potential. Functions are ranked from .001 to 1.0, signifying low to high values. When a wetland function has exceptional quality, it is given a score of 2.0.

While performing MNRAM assessments, wetlands in North Branch were grouped and assessed together according to proximity and similarity in habitat and community type. In MNRAM, each assessment is given a unique "wetland name" created from the section, township, and range the assessment occurred in, followed by the sequential number of the assessment. Below are the wetland names noted in the MNRAM assessment summary sheets and the wetlands that were grouped together for each assessment.

27-118-21-20-001: Wetland B

27-118-21-20-002: Wetlands A, C, and D

27-118-21-21-001: Wetlands E, F, G, and H

27-118-21-21-002: Wetland I

The MNRAM summary sheets are presented in Appendix B-3. In general, the wetlands scored relatively low. This is mainly due to the urbanized setting, limited upland buffer, nuisance and exotic species, and problems inherent to the stream itself such as stream bank erosion and degraded water quality from stormwater drainage.

5.0 Summary

The wetlands associated with the North Branch of Bassett Creek were delineated in accordance to the COE Wetland Delineation Manual and Midwest Regional Supplement. Nine wetlands totaling approximately 9.6 acres were identified and field delineated. Of these, five wetland totaling approximately 4.6 acres are located within the restoration area. These are primarily floodplain forest riparian wetlands which border North Branch for the extent of the one-mile study area, and are separated by roads. In addition, MNRAM functional wetland assessments were also performed. The wetlands generally scored low in many environmental criteria.

6.0 References

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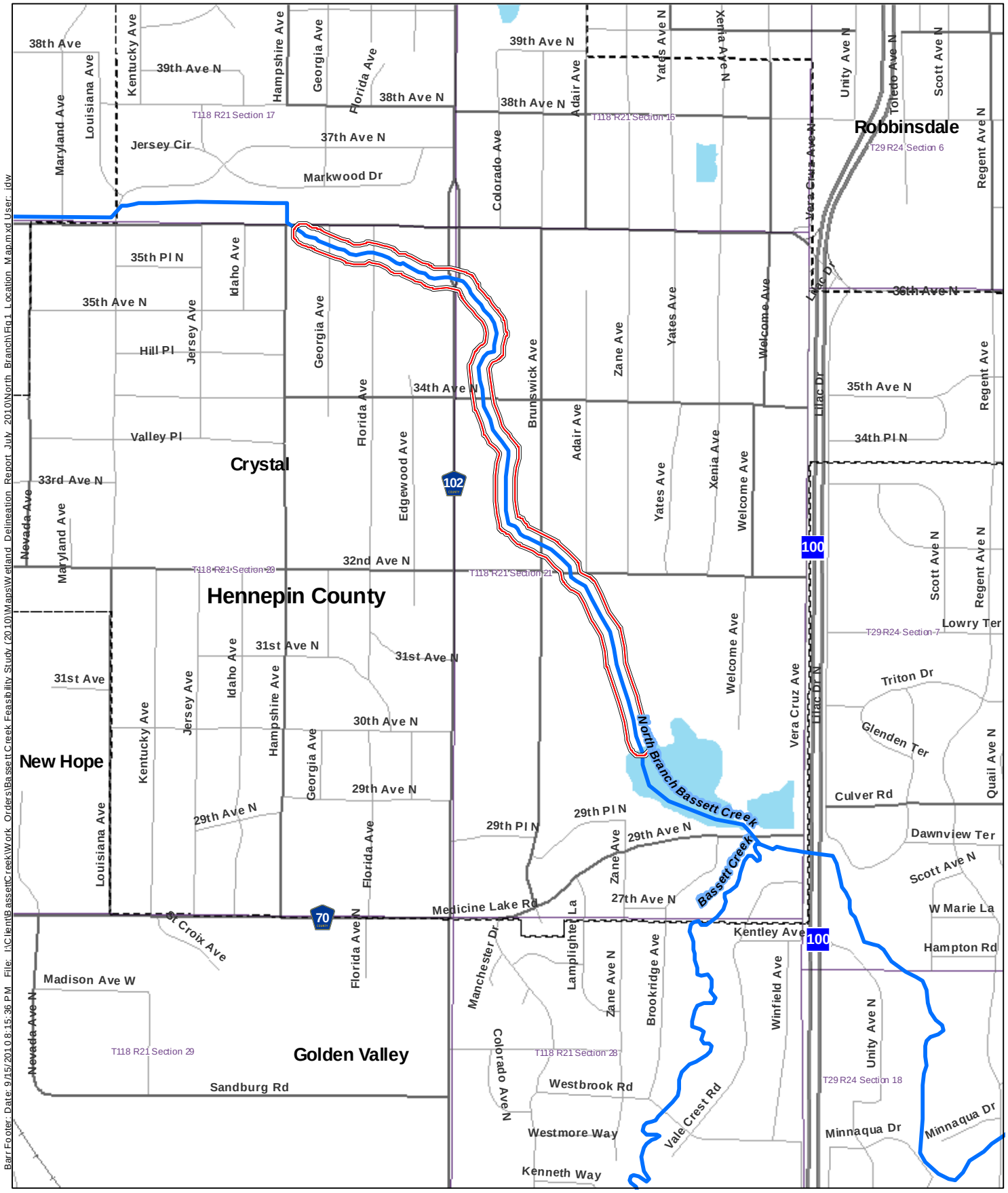
Figures



North Branch Study Area
Creek Channels
Cities and Townships

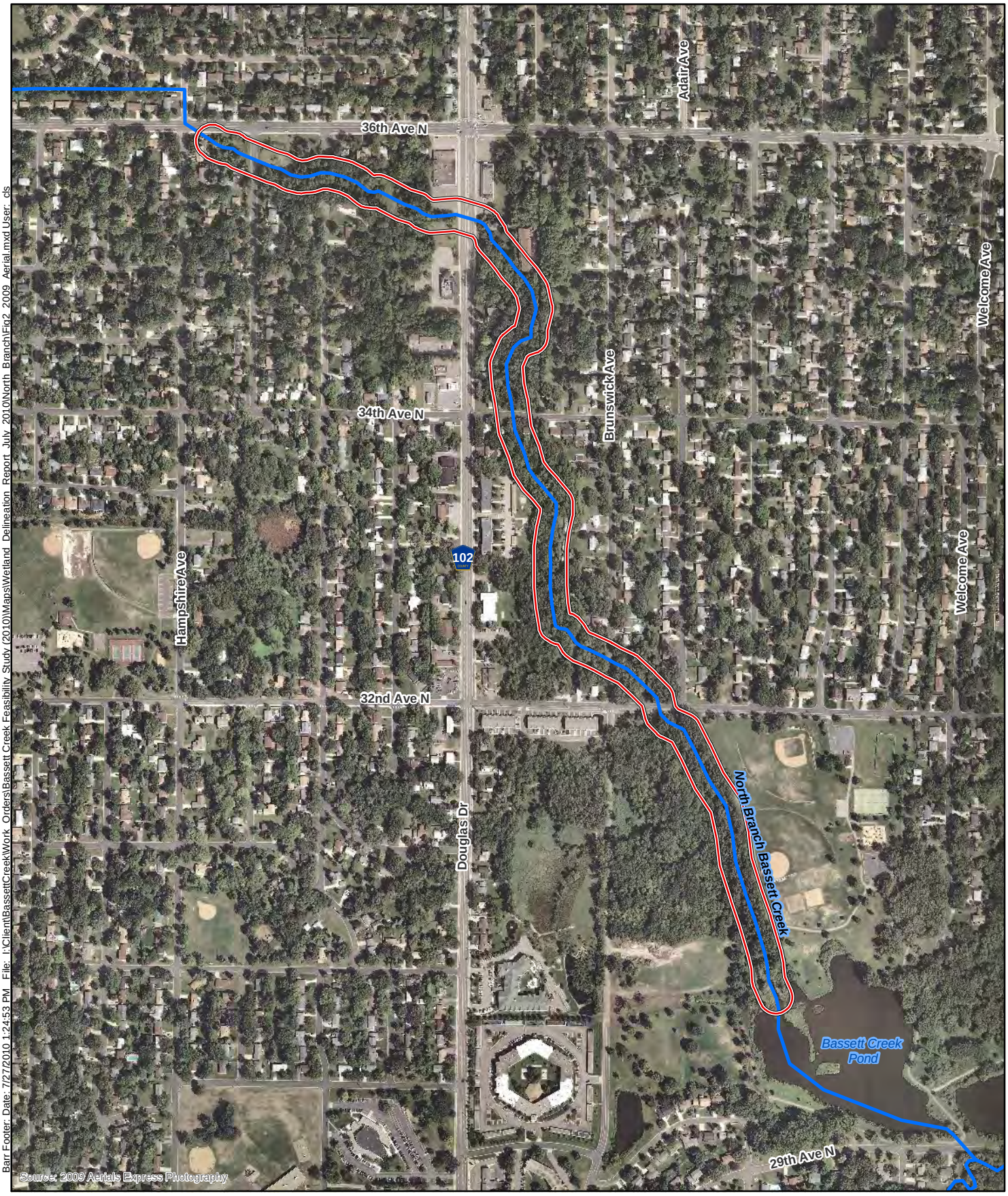
N
W E
S

1,000 500 0 1,000 Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-1
LOCATION MAP
Bassett Creek Watershed
Management Commission
August 2010

BARR



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North Branch Study Area

Creek Channels

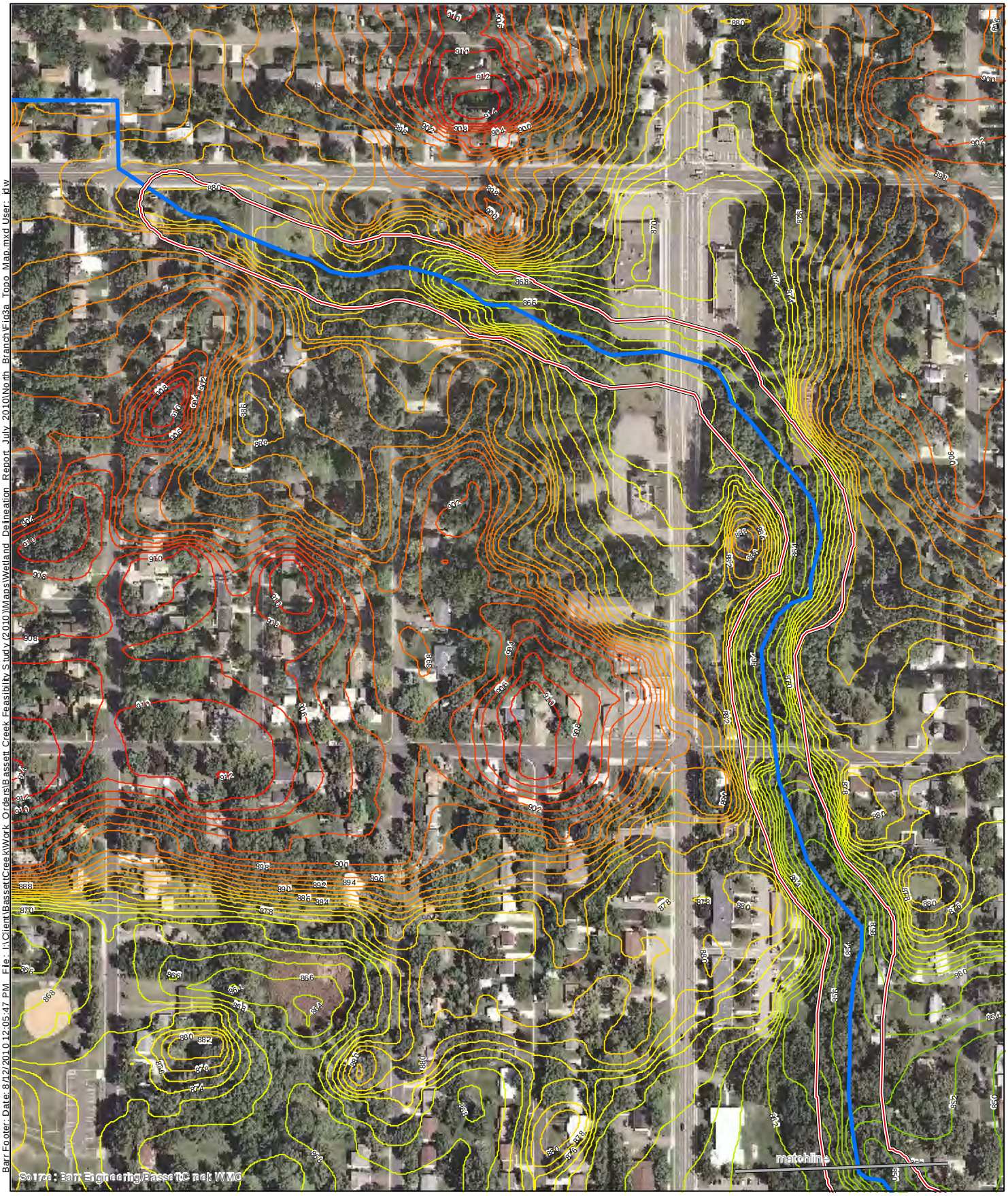
N
W E
S

600 300 0 600 Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-2
2009 AERIAL PHOTO
Bassett Creek Watershed
Management Commission
August 2010

BARR



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North Branch Study Area

Creek Channels

N
W E
S

300 150 0 300 Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-3a
TOPOGRAPHIC MAP
Bassett Creek Watershed
Management Commission
August 2010

BARR

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North Branch Study Area

Creek Channels

N

W E

S

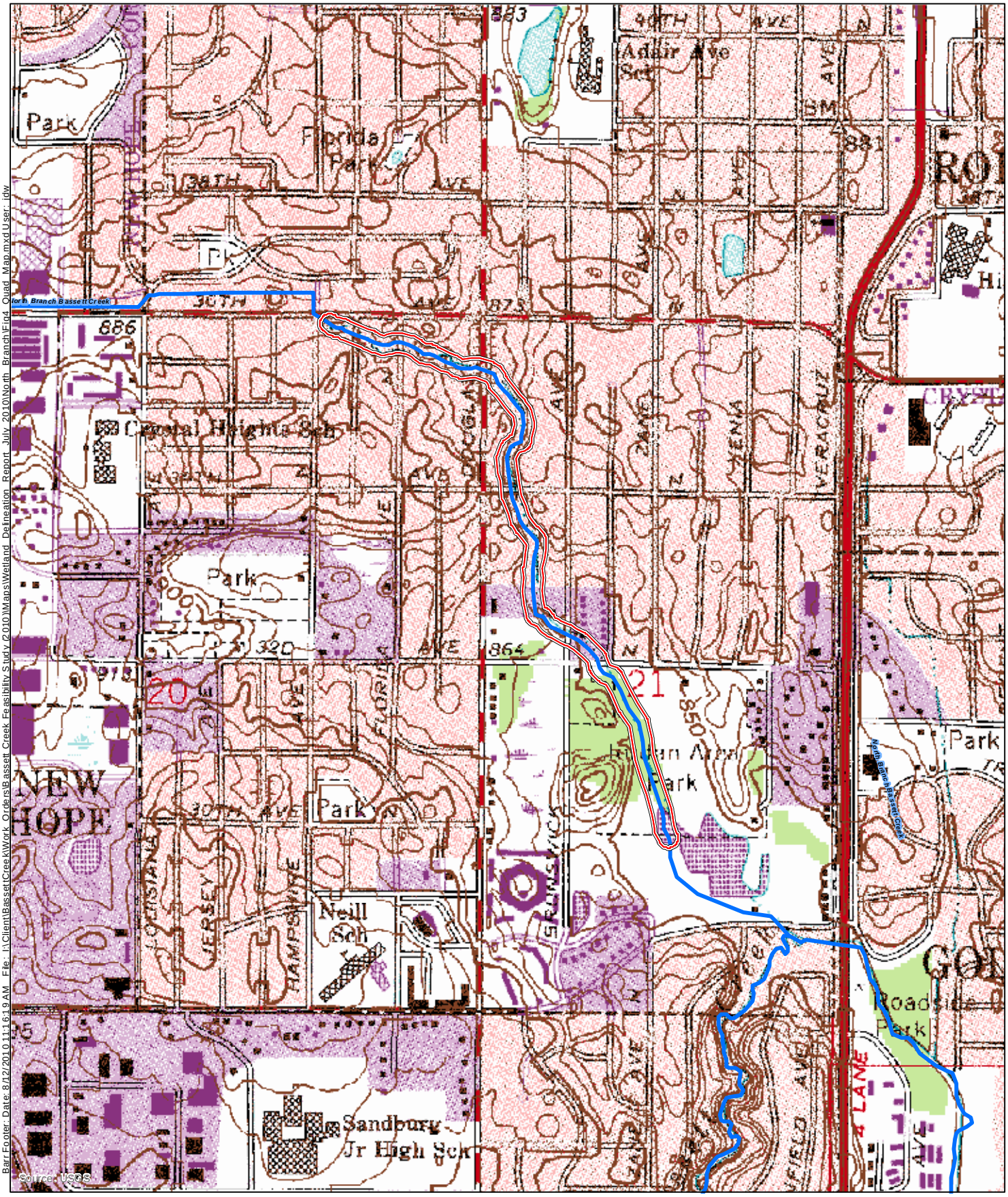
300 150 0 300

Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-3b
TOPOGRAPHIC MAP
Bassett Creek Watershed
Management Commission
August 2010

BARR



North Branch Study Area

Creek Channels

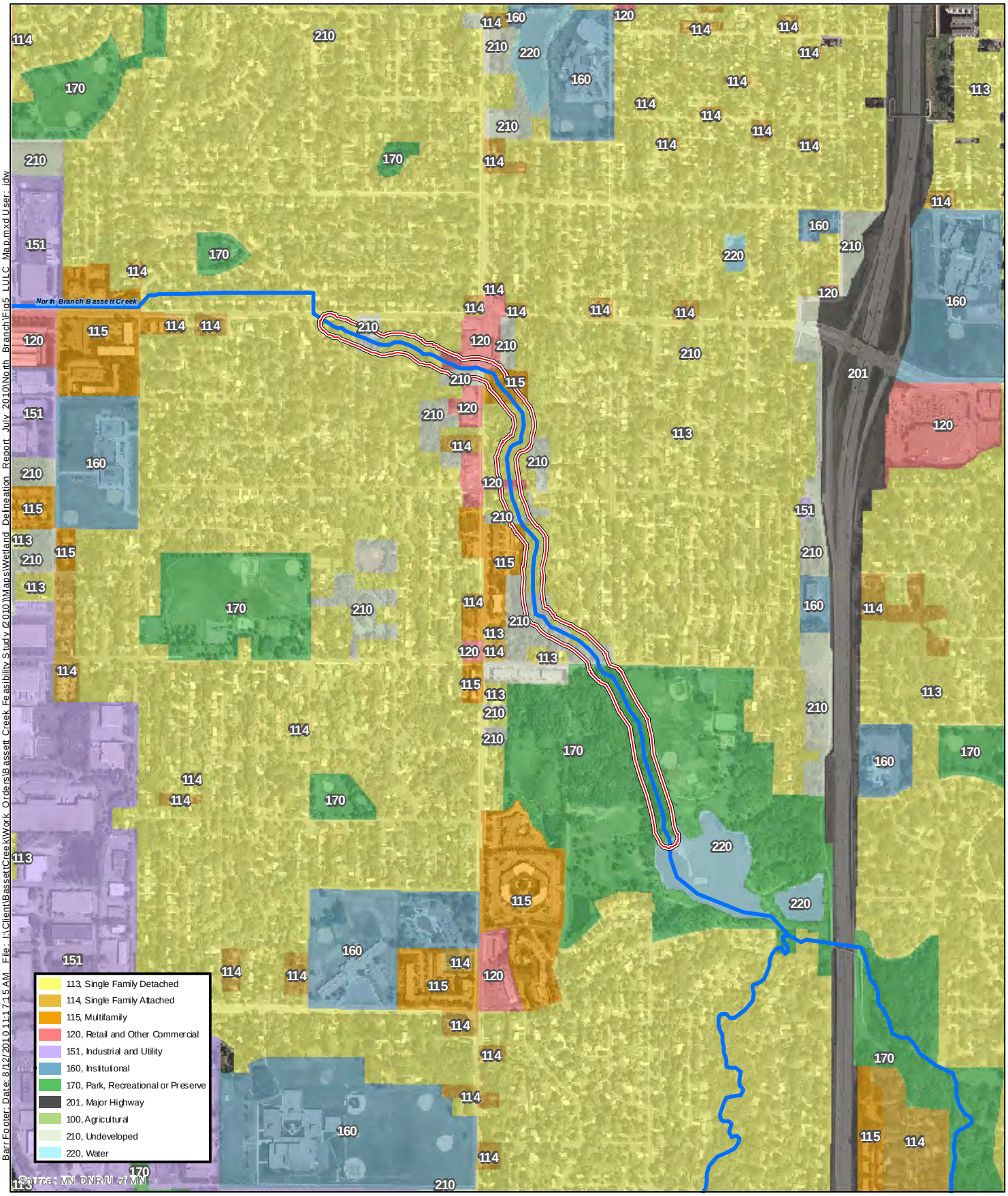
N
W E
S

1,000 500 0 1,000 Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-4
QUAD MAP
Bassett Creek Watershed
Management Commission
August 2010

BARR



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North Branch Study Area

Creek Channels

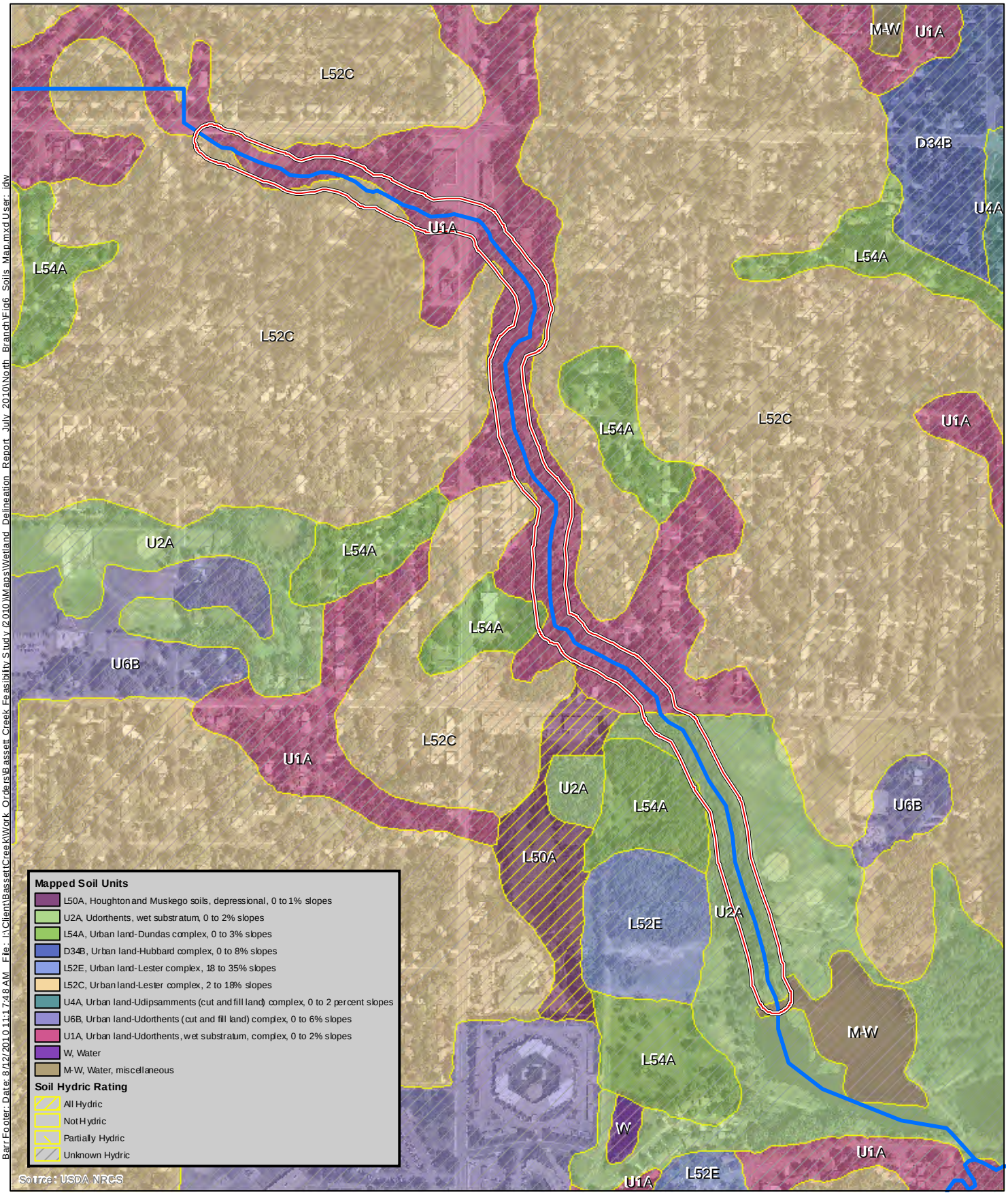
N
W E
S

1,000 500 0 1,000 Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-5
2005 LAND COVER MAP
Bassett Creek Watershed Management Commission
August 2010

BARR



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North Branch Study Area

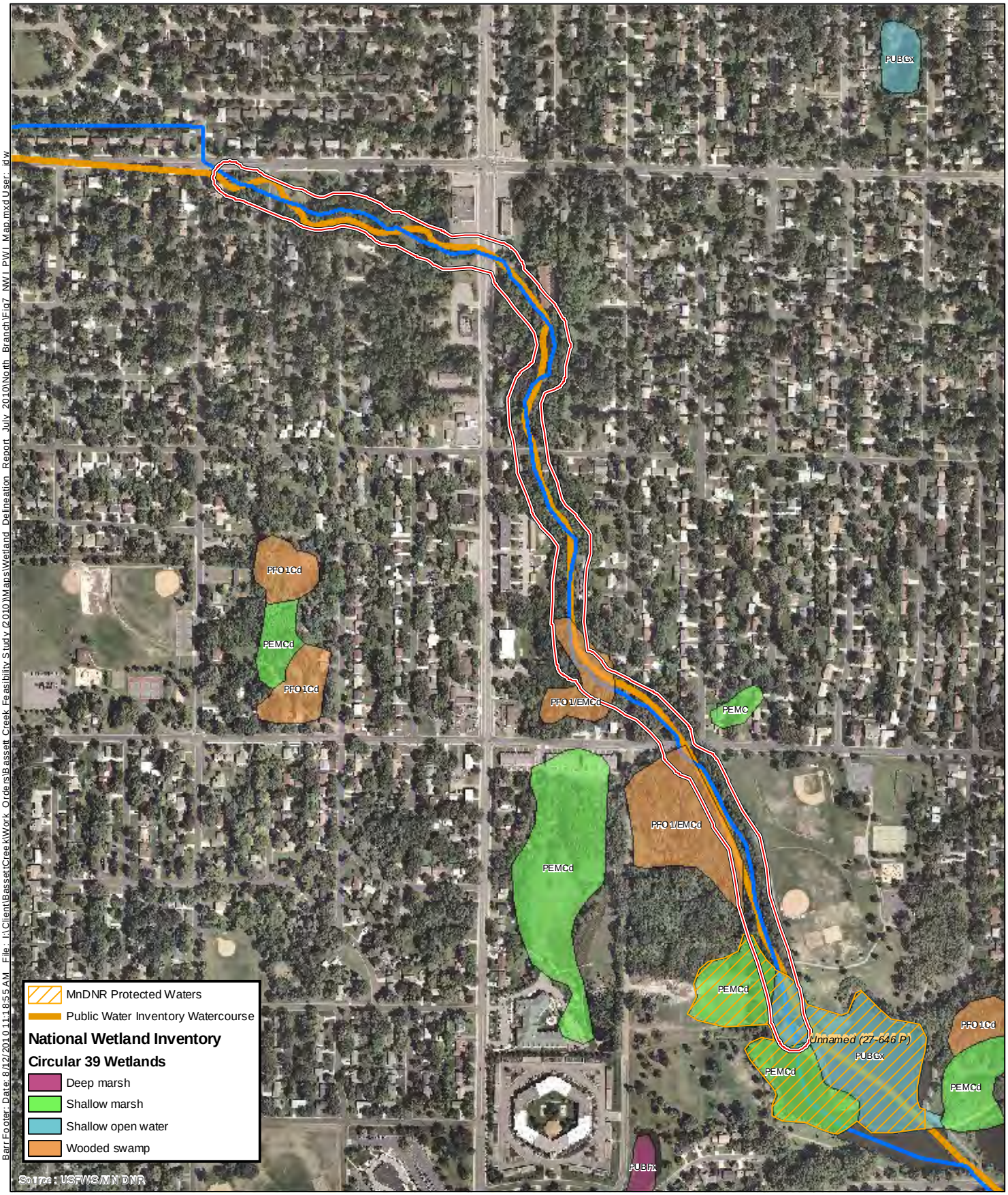
Creek Channels

N
W E
S

600 300 0 600 Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-6
SOILS MAP
Bassett Creek Watershed Management Commission
August 2010



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NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-7
NATIONAL WETLAND INVENTORY/
PUBLIC WATERS INVENTORY MAP
Bassett Creek Watershed
Management Commission
August 2010

W-A
SB-1
W-B
SB-2
W-C
W-D
W-E
W-F
W-G
North Branch Bassett Creek
MATCHLINE
Wetland delineation performed by: Barr Engineering, 2010

North Branch Study Area
Creek Channels
Wetland Delineation
Data Point

N
W
E
S

200 100 0 200 Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-8
WETLANDS A THROUGH G
Bassett Creek Watershed
Management Commission
August 2010

BARR

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MATCHLINE

SB-4

W-G

W-H

SB-3

SB-5

SB-6

W-I

North Branch Bassett Creek

Wetland delineation performed by: Barr Engineering, 2010

North Branch Study Area

Creek Channels

Wetland Delineation

Data Point

N

W E

S

200 100 0 200 Feet

NORTH BRANCH
BASSETT CREEK
WETLAND DELINEATION

Figure B-9
WETLANDS G THROUGH I
Bassett Creek Watershed
Management Commission
August 2010

BARR

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Appendix C

Cultural and Historical Resources

REPORT ON PRELIMINARY RECONNAISSANCE SURVEY
CONDUCTED BY ARCHAEOLOGICAL RESEARCH SERVICES (ARS)
ALONG NORTH BRANCH OF BASSETT CREEK

CITIES OF CRYSTAL AND GOLDEN VALLEY, HENNEPIN COUNTY, MINNESOTA

During the week of June 14th, 2010, ARS conducted a pedestrian survey of two segments of Bassett Creek, i.e., the main stem between Wisconsin Avenue and Highway 100 and the north branch between 36th Avenue and Bassett Creek Pond.

A records and literature search that was completed in 2009 for the Basset Creek Watershed Management Commission (BCWMC) Resource Management Plan did not identify any known archaeological or historic resources along these two segments of the creek[1]. Nor, however, did it indicate that any systematic efforts had been made to survey these areas for cultural evidence. Consequently, as cultural resources are legally protected from adverse impact caused by publicly funded and/or licensed projects,[2] such survey efforts will presumably be required in order to determine how future management plans for Bassett Creek can ensure that archaeological evidence -- and possibly also above-ground historic features -- are adequately protected either through avoidance or mitigative data recovery.

In order to determine what areas along these two segments have archaeological and historic potential, ARS staff, under the direction of Christina Harrison:

1. compared current aerial photographs to earlier ones from the 1940s-1990s in order to determine changes in land use, vegetation patterns and, in some cases, topography;

2. interviewed property owners and other local residents likely to have knowledge about any past findings of archaeological/historic nature;

3. Walked the entire length of the two segments inspecting both creek banks as well as any portions of the valley floor that may be impacted by future erosion control efforts.

---

1 Harrison, Christina, 2009. Cultural Resource Phase 1A Review Conducted for the Bassett Creek Watershed Management Commission Resource Management Plan, Hennepin County, Minnesota.

2 At the federal level, by Section 106 of the National Historic Preservation Act, within the state and its subdivisions, by the Minnesota Field Archaeology and the Minnesota Private Cemeteries Acts, as described in Harrison 2009.

Large scale aerial photographs of the survey areas were provided by Barr Engineering. Observations and recommendations were noted and referenced by subareas as indicated on the applicable aerial photographs, included in Appendix C Figures C01 to C04. Initial efforts to identify subareas by GPS readings proved too imprecise to be useful, due primarily to the usually quite dense foliage and frequently narrow, steep-sided topography of the valley.

In the following discussions and recommendations, standard Phase I testing refers to shovel testing at controlled intervals which may vary according to topographic and vegetation factors but should not exceed 10 meters/30 feet. Testing, recording and laboratory procedures should be in compliance with SHPO guidelines. As needed, recommendations should be provided for more intensive evaluative testing.

NORTH BRANCH FIGURES C01, C02 AND C03 (N 1/2)

Within these segments, the creek flows either (a) through culverts buried beneath embankments that accommodate Douglas Drive, Georgia Avenue, 34th Avenue and 32nd Avenue as well as a driveway, a parking lot and a pedestrian trail, or (b) through very low marshy areas flanked by steeply rising higher ground that lacks archaeological potential.

NORTH BRANCH FIGURE C03 (S 1/2) AND C04

South of 32nd Avenue, the frequently straightened course of the creek follows a narrow, wooded valley that is flanked on the west by a high wooded ridge and pronounced east-facing slope, on the east by open parkland which, judging by comparison with historic aerial photographs, has been much modified by landscaping and extensive filling of a large wetland. Visual inspection along the frequently eroded banks as well as the areas adjacent to the creek indicated that all lack archaeological potential.

Figure C01

NORTH BRANCH BASSET CREEK
36th to Bassett Creek Pond

Figure C02

NORTH BRANCH BASSET CREEK
36th to Bassett Creek Pond

N

Feet
100 0 100

Douglas Dr

Brunswick Ave

34th Ave N

870
860
860
850
850
860
860
860
860
860
850
860
870
870
880
880
Adair Ave
32nd Ave N
Brunswick Ave

N

Feet

100 0 100

Figure C03

NORTH BRANCH BASSET CREEK
36th to Bassett Creek Pond

N

Feet

100 0 100

Figure C04

NORTH BRANCH BASSET CREEK
36th to Bassett Creek Pond

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Item 6A

BASSETT CREEK WATERSHED MANAGEMENT COMMISSION

RESOLUTION NO. 10-07

RESOLUTION APPROVING WATERSHED PLAN AMENDMENT

WHEREAS, the Commission is the watershed management organization responsible for preparing a watershed plan for the Bassett Creek watershed, pursuant to Minn. Stat. § 103B.231; and

WHEREAS, the Commission adopted its watershed plan entitled, "Bassett Creek Watershed Management Commission, Water Management Plan, July 2004" on September 16, 2004 (hereinafter the "Plan"); and

WHEREAS, the Commission has submitted for review an amendment to the Plan to modify the capital improvement program as follows (the "Plan Amendment"):

- Two additions to Table 12-2, Water Quality Management and Flood Control 10-Year Capital Improvements Program (CIP);
  - One project is proposed to restore the Main Stem of Bassett Creek in the City of Golden Valley, from Highway 169 to the City of Crystal boundary; construction is to begin in 2011.
  - One project is proposed to restore the North Branch of Bassett Creek from 36th Avenue to Bassett Creek Park in the City of Crystal; construction is to begin in 2011; and

WHEREAS, the Plan Amendment has been reviewed in accordance with the requirements of Minn. Stat. § 103B.231, which review is complete; and

WHEREAS, the Commission finds that the adoption of the Plan Amendment is in accordance with the requirements of law and in the best interests of the public;

NOW, THEREFORE, BE IT RESOLVED, by the Board of Commissioners of the Bassett Creek Watershed Management Commission as follows:

1. The Plan Amendment is hereby approved in accordance with Minn. Stat. § 103B.231, Subd. 10.

2. The Recorder is directed to transmit a copy of the Plan Amendment to Hennepin County, the Minnesota Board of Water and Soil Resources, and the clerks of all member cities.

Adopted by the Board of Commissioners of the Bassett Creek Watershed Management Commission this 23rd of September, 2010.

_____

Chair Date

ATTEST:

_____

Secretary Date

Item 6A

BASSETT CREEK WATERSHED MANAGEMENT COMMISSION

RESOLUTION NO. 10-08

A RESOLUTION ORDERING 2011 IMPROVEMENTS,
DESIGNATING MEMBERS
RESPONSIBLE FOR CONSTRUCTION, AND MAKING FINDINGS
PURSUANT TO MINNESOTA STATUTES, SECTION 103B.251

WHEREAS, on September 16, 2004, the Commission adopted the *Bassett Creek Watershed Management Commission, Water Management Plan, July 2004* (the "Plan"); and

WHEREAS, the Plan includes a Capital Improvement Program ("CIP") listing capital projects in Table 12-2 of the Plan; and

WHEREAS, the CIP, as amended by Resolution No. 10-07 adopted on September 23, 2010, includes the following capital projects for the year 2011:

> Restoration of the Main Stem of Bassett Creek from Wisconsin Avenue to Rhode Island Avenue in the City of Golden Valley and from Duluth Street in Golden Valley to the City of Crystal boundary (the "Bassett Creek Project").
>
> Restoration of the channel of the North Branch of Bassett Creek from 200 feet upstream of Douglas Drive to 32nd Avenue North in the City of Crystal (the "North Branch Project").

(hereinafter collectively referred to as the "2011 Projects"); and

WHEREAS, the Plan specifies a county tax levy under Minn. Stat., § 103B.251 as the source of funding for the 2011 Projects; and

WHEREAS, on September 23, 2010, following published and mailed notice in accordance with the Commission's Joint Power Agreement and Minn. Stat., § 103B.251, the Commission conducted a public hearing on the 2011 Projects; and

WHEREAS, by Resolution 09-05, adopted on September 17, 2009, the Commission approved a project to restore the channel of the Main Stem of Bassett Creek from the Crystal City Boundary to Regent Avenue in the City of Golden Valley (the "2010 Project"); and

WHEREAS, Resolution 09-05 provided that funds would be raised for the 2010 Project by tax levy, pursuant to Minn. Stat., § 103B.251, in 2010 for collection in 2011 in the amount of Six Hundred One Thousand Three Hundred Dollars ($601,300); and

WHEREAS, a grant for the 2010 Project has been approved in the amount of One Hundred Thirty-Five Thousand Dollars ($135,000) from Hennepin County (the "Hennepin County Grant"); and

WHEREAS, One Hundred Eighty Thousand Dollars ($180,000) has been allocated to the 2010 Project out of a grant in the amount of Three Hundred Sixty Thousand Dollars ($360,000) from the Minnesota Board of Water and Soil Resources ("BWSR") (the "BWSR Grant"); and

WHEREAS, the Hennepin County Grant and the portion of the BWSR Grant allocated to the 2010 Project have reduced the amount needed to be raised by tax levy pursuant to Minn. Stat., § 103B.251 to Two Hundred Eight-Six Thousand Three Hundred Dollars ($286,300).

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Bassett Creek Watershed Management Commission as follows:

1. The 2011 Projects will be conducive to the public health and promote the general welfare and are in compliance with Minnesota Statutes, Sections 103B.205 to 103B.255 (the "Act") and with the Plan as adopted and amended in accordance with the Act. The 2011 Projects are hereby ordered.

2. The estimated cost of the Bassett Creek Project is Five Hundred Eighty Thousand Two Hundred Dollars ($580,200). Of this amount, Four Hundred Nineteen Thousand Five Hundred Dollars ($419,500) will be paid from the Commission's Capital Improvement Program Closed Project Account. Up to One Hundred Sixty Thousand Seven Hundred Dollars ($160,700) will be paid from funds received from a county tax levy pursuant to Minnesota Statutes, Section 103B.251, levied in 2010 for collection in 2011.

3. The estimated cost of the North Branch Project is Eight Hundred Thirty-Four Thousand Nine Hundred Dollars ($834,900). Of this amount, Four Hundred Nineteen Thousand Five Hundred Dollars ($419,500) will be paid from the Commission's Capital Improvement Program Closed Project Account. Up to Four Hundred Fifteen Thousand Four Hundred Dollars ($415,400) will be paid from funds received from a county tax levy pursuant to Minnesota Statutes, Section 103B.251 levied in 2010 for collection in 2011.

4. Of the costs of the 2011 Projects, the Commission hereby certifies costs to Hennepin County in accordance with Minnesota Statutes, Section 103B.251 of One Hundred Sixty Thousand Seven Hundred Dollars ($160,700) for the Bassett Creek Project and Four Hundred Fifteen Thousand Four Hundred Dollars ($415,400) for the North Branch Project. For the 2010 Project, the Commission hereby certifies costs to Hennepin County in accordance with Minnesota Statutes, Section 103B.251 of Two Hundred Eight-Six Thousand Three Hundred Dollars ($286,300). The total amount certified to Hennepin County for the 2010 Project and the 2011 Projects is Eight

Hundred Sixty-Two Thousand Four Hundred Dollars ($862,400) for payment by the county in accordance with Minnesota Statutes, Section 103B.251, Subd. 6.

5. The Commission receives, accepts and approves the feasibility reports for the 2011 Projects.

6. The costs of each of the 2011 Projects will be paid by the Commission up to the amounts specified in paragraphs 2 and 3 above from proceeds received from Hennepin County pursuant to Minnesota Statutes, Section 103B.251. Additional costs may be paid by the cities in which the Projects are constructed, but no costs will be charged to other members of the Commission.

7. The City of Golden Valley is designated as the member responsible for contracting for the construction of the Bassett Creek Project, and the engineer designated for preparation of plans and specifications is the Golden Valley City Engineer, or other substitute engineers selected and retained by the City of Golden Valley. Contracts for construction shall be let in accordance with the requirements of law applicable to the City of Golden Valley.

8. The City of Crystal is designated as the member responsible for contracting for the construction of the North Branch Project, and the engineer designated for preparation of plans and specifications is the Crystal City Engineer, or other substitute engineers selected and retained by the City of Crystal. Contracts for construction shall be let in accordance with the requirements of law applicable to the City of Crystal.

Adopted by the Board of Commission of the Bassett Creek Watershed Management Commission the 23rd day of September, 2010.

_____
Chair

ATTEST:

_____
Secretary

Item 6B

6B.

resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: Bassett Creek Watershed Management Commission

From: Barr Engineering Co.

Subject: Item 6B—Certification of Levy to Hennepin County
BCWMC September 23, 2010 Meeting Agenda

Date: September 15, 2010

Project: 23270051.31 2010

6B. Certification of Levy to Hennepin County

Recommended/requested Commission actions:

1. Certify levy to Hennepin County for the North Branch and Main Stem channel restoration projects; staff recommends a levy of $862,400.

Background

To develop a recommendation for the 2011 levy for the North Branch and Main Stem restoration projects, staff first considered the costs of the current proposed projects and the project costs carried over from the previous year (Table 1 below):

Table 1. Funds Needed for CIP Projects

Project	Amount
Main Stem Channel Restoration, 2010, Crystal Border to Regent Ave[1]	$601,300
North Branch Channel Restoration, 2011, 36th Ave to Bassett Creek Park	$834,900
Main Stem Channel Restoration, 2011, Wisconsin Ave to Rhode Island Avenue, and Duluth St to Crystal Boundary	$580,200
Total Funds Needed	**$2,016,400**

[1] From BCWMC Resolution 09-05 ordering the 2010 improvements

For the 2010 Main Stem project, staff's recommendation for the tax levy takes into consideration the grants received for the Bassett Creek Main Stem 2010 project (Table 2 below):

Table 2. Grants Received for 2010 Bassett Creek Main Stem CIP Project

Grant	Amount
Hennepin County Grant – City of Golden Valley – 2010 Bassett Creek Main Stem project	$135,000
BWSR - BCWMC – 2010 Bassett Creek Main Stem project portion[1]	$180,000
Total Grant Funds Received	**$315,000**

[1] 1/2 of $360,000 grant

Based on the grants received for 2010 Bassett Creek Main Stem project, **staff recommends a levy of $286,300 for this project** ($601,300, less $315,000).

For the 2011 Main Stem and North Branch projects, staff reviewed the status of the CIP project account to estimate the amount of funds available in the CIP reserve, as summarized in Table 3:

Table 3. Status of CIP Project Account

CIP Projects	Estimated Amount in Reserve
Floodproofing 2003	$1,775
Medicine Lake – In-Lake Herbicide Treatments 2005, 2006, 2008	$67,807
Medicine Lake – East Side Ponds 2004	($18,314)
Northwood Lake - Water Quality Treatment Ponds 2005	$29,847
Westwood Lake - Flag Avenue Pond	$86,135
West Medicine Lake Park Pond (substantially complete)[1]	$350,000
Lakeview Park Pond	($638)
Northwood Lake East Pond 2009	$35,419
Crane Lake - Ramada Inn Pond	$89,961
Sweeney Branch Channel Stabilization	$114,243
Wirth Lake - Pond and Alum Treatment[2]	$169,909
Resource Management Plan	($57,094)
Bassett Creek Channel Stabilization, 2010, Crystal Border to Regent, transfer from closed project account[3]	($2,262)
Plymouth Creek Channel Stabilization, 2010, Medicine Lake to 26th Ave, transfer from closed project account[3]	($62,738)
Plymouth Creek Channel Stabilization, 2010, Medicine Lake to 26th Ave, Hennepin County Grant to City of Plymouth	$155,000
Plymouth Creek Channel Stabilization, 2010, Medicine Lake to 26th Ave, BWSR Grant to BCWMC[4]	$180,000
Total Estimated CIP Reserve Balance	**$1,139,050**
Desired Amount to Leave in Reserve	$300,000
Total Estimated CIP Reserve Available	**$839,050**

[1] Amount shown is estimated reserve at final project closeout
[2] CIP projects that are unlikely to be constructed/implemented and/or funded by BCWMC
[3] From BCWMC Resolution 09-05 ordering the 2010 improvements
[4] 1/2 of $360,000 grant

Assuming $839,000 is available in the CIP reserve, staff recommends applying this reserve amount to the 2011 Main Stem and North Branch projects. **Staff further recommends a levy of $576,100** to cover the remaining costs of the 2011 projects ($1,415,100, less $839,000).

In summary, **staff recommends a total levy request of $862,400** for all three projects ($286,300 plus $576,100). This is less than the proposed maximum levy of $935,000. The following is a summary of the staff recommendations:

2010 Main Stem Project:

Total Project Cost[1]	$636,100
Less 2010 Levy[1]	-$34,800
Remaining Project Costs – 2011[1]	$601,300
Less Grants Received for Project	-$315,000
Recommended 2011 Levy	**$286,300**

[1] From Resolution 09-05

2011 North Branch & 2011 Main Stem Projects:

2011 Project Costs ($834,900 + $580,200)	$1,415,100
Less CIP Reserve to be Applied to Projects	-$839,000
Recommended 2011 Levy	**$576,100**

Total Recommended 2011 Levy:	**$862,400**

6B.

September 23, 2010

Jill Alverson
County Auditor – Treasurer
A-600 Government Center
300 South Sixth Street
Minneapolis, Minnesota 55487-0060

Re: Bassett Creek Watershed Management Commission 2010 Tax Levy Request to Hennepin County for Collection in 2011

Dear Ms. Alverson:

On September 23, 2010, the Bassett Creek Watershed Management Commission adopted Resolution No. 10-08, certifying for payment by Hennepin County in 2011 the amount of Eight Hundred Sixty-Two Thousand Four Hundred Dollars ($862,400) as the cost of the following water quality improvement projects that had been ordered by Resolutions 10-08 and 09-05:

Restoration of the Main Stem of Bassett Creek from Wisconsin Avenue to Rhode Island Avenue in the City of Golden Valley and from Duluth Street in Golden Valley to the City of Crystal boundary. The estimated cost of this 2011 project is $580,200, of which up to $160,700 will be paid from funds received from a county tax levy pursuant to Minnesota Statutes, Section 103B.251, to be levied in 2010 for collection in 2011.

Restoration of the Main Stem of Bassett Creek from the Crystal City boundary to Regent Avenue in the City of Golden Valley. The estimated cost of this 2010 project was $636,100, of which up to $286,300 will be paid from funds received from a county tax levy pursuant to Minnesota Statutes, Section 103B.251, to be levied in 2010 for collection in 2011.

Restoration of the channel of the North Branch of Bassett Creek from 36th Avenue to Bassett Creek Park in the City of Crystal. The estimated cost of this 2011 project is $834,900, of which up to $415,400 will be paid from funds received from a county tax levy pursuant to Minnesota Statutes, Section 103B.251, to be levied in 2010 for collection in 2011.

A certified copy of Resolutions 10-08 and 09-05 are attached.

This letter and the attached resolutions will serve as certification to the County for payment of these costs in accordance with Minnesota Statutes, Section 103.b.251, Subd. 4. The Commission understands that payment will be made in 2011 from taxes to be levied in 2010.

Sincerely,

Amy Herbert, Recording Administrator
Bassett Creek Watershed Management Commission

Encl.
Cc: Robert A. Burck, Assistant County Attorney (w/ encls.)
Joel Settles (w/ encls.)
Greg Perlick (w/ encls.)

6B.

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

I, the undersigned, being the duly qualified and acting Chair of the Bassett Creek Watershed Management Commission (the "Commission"), do hereby certify that I have carefully compared the attached and foregoing Resolution No. 10-08 adopted by the Board of Commissioners of the Commission on September 23, 2010, with the original files and that the resolutions are full, true and correct copies of both resolutions so adopted.

The motion for adoption of Resolution No. 10-08 was made by _____ _____ and seconded by _____. The following Commissioners voted in favor of Resolution 10-08:

_____

_____

_____

_____

_____

_____

_____

_____

_____

and ___ Commissioners voted against Resolution No. 10-08, whereupon it was declared _____ by Chair Welch.

WITNESS my hand officially as such Chair of the Commission this 23rd day of September, 2010.

_____

Linda Loomis, Chair
Bassett Creek Watershed Management Commission

[THE COMMISSION
HAS NO SEAL]

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

I, the undersigned, being the duly qualified and acting Chair of the Bassett Creek Watershed Management Commission (the "Commission"), do hereby certify that I have carefully compared the attached and foregoing Resolution No. 09-05 adopted by the Board of Commissioners of the Commission on September 17, 2009, with the original files and that the resolutions are full, true and correct copies of both resolutions so adopted.

The motion for adoption of Resolution No. 09-05 was made by Commissioner Stauner and seconded by Commissioner Thornton. The following Commissioners voted in favor of Resolution 09-05:

Pauline Langsdorf, City of Crystal

Linda Loomis, City of Golden Valley

Cheri Templeman, City of Medicine Lake

Michael Welch, City of Minneapolis

Daniel Stauner, City of New Hope

Liz Thornton, City of Plymouth

Jim deLambert, City of St. Louis Park

and 0 Commissioners voted against Resolution No. 09-05, whereupon it was declared approved by Chair Welch.

WITNESS my hand officially as such Chair of the Commission this 23rd day of September, 2010.

_____

Linda Loomis, Chair
Bassett Creek Watershed Management Commission

[THE COMMISSION
HAS NO SEAL]

BASSETT CREEK WATERSHED MANAGEMENT COMMISSION

RESOLUTION NO. 09-05

A RESOLUTION ORDERING 2010 IMPROVEMENTS,
DESIGNATING MEMBERS
RESPONSIBLE FOR CONSTRUCTION, AND MAKING FINDINGS
PURSUANT TO MINNESOTA STATUTES, SECTION 103B.251

WHEREAS, on September 16, 2004, the Commission adopted the *Bassett Creek Watershed Management Commission, Water Management Plan, July 2004* (the "Plan"); and

WHEREAS, the Plan includes a Capital Improvement Program ("CIP") listing capital projects in Table 12-2 of the Plan; and

WHEREAS, the CIP, as amended by Resolution No. 09-04 adopted on July 16, 2009, includes the following capital projects for the year 2010:

> Plymouth Creek Restoration (PC-1), a project to restore the channel of Plymouth Creek from Medicine Lake to 26th Avenue in the City of Plymouth (the "Plymouth Creek Project"); and
>
> Bassett Creek Main Stem Restoration, a project to restore the channel of the Main Stem of Bassett Creek from the Crystal City boundary to Regent Avenue in the City of Golden Valley (the "Bassett Creek Project").

(hereinafter collectively referred to as the "2010 Projects"); and

WHEREAS, the Plan specifies a county tax levy under Minn. Stat. § 103B.251 as the source of funding for the 2010 Projects; and

WHEREAS, on September 17, 2009, following published and mailed notice in accordance with the Commission's Joint Power Agreement and Minn. Stat. § 103B.251, the Commission conducted a public hearing on the 2010 Projects;

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Bassett Creek Watershed Management Commission as follows:

1. The 2010 Projects will be conducive to the public health and promote the general welfare and are in compliance with Minnesota Statutes 103B.205 to 103B.255 (the "Act") and with the Plan as adopted and amended in accordance with the Act. The 2010 Projects are hereby ordered.

2. The estimated cost of the Plymouth Creek Project is Nine Hundred Sixty-Five Thousand Two Hundred Dollars ($965,200). Of this amount, Sixty-Two Thousand

Seven Hundred Thirty-Eight Dollars ($62,738) will be paid from the Commission's Capital Improvement Program Closed Project Account and up to Nine Hundred Two Thousand Four Hundred Sixty-Two Dollars ($902,462) will be paid from funds received from a county tax levy pursuant to Minnesota Statutes, Section 103B.251, levied in 2009 for collection in 2010.

3. The estimated cost of the Bassett Creek Project is Six Hundred Thirty-Six Thousand One Hundred Dollars ($636,100). Of this amount Two Thousand Two Hundred Sixty-Two Dollars ($2,262) will be paid from the Commission's Capital Improvement Program Closed Project Account. Up to Thirty-Four Thousand Eight Hundred Dollars ($34,800) will be paid from funds received from a county tax levy pursuant to Minnesota Statutes, Section 103B.251 levied in 2009 for collection in 2010, and up to Six Hundred One Thousand Three Hundred Dollars ($601,300) will be paid from funds received from a county tax levy pursuant to Minnesota Statutes, Section 103B.251 levied in 2010 for collection in 2011.

4. Of the costs of the 2010 Projects the Commission hereby certifies costs to Hennepin County in accordance with Minnesota Statutes, Section 103B.251 of Nine Hundred Two Thousand Four Hundred Sixty-Two Dollars ($902,462) for the Plymouth Creek Project and Thirty-Two Thousand Five Hundred Thirty-Eight Dollars ($32,538) for the Bassett Creek Project for a total amount certified of Nine Hundred Thirty-Five Thousand Dollars ($935,000) for payment by the county in accordance with Minnesota Statutes, Section 103B.251, Subd. 6.

5. The Commission receives, accepts and approves the feasibility reports for the 2010 Projects.

6. The costs of each of the 2010 Projects will be paid by the Commission up to the amounts specified in paragraphs 2 and 3 above from proceeds received from Hennepin County pursuant to Minnesota Statutes, Section 103B.251. Additional costs may be paid by the cities in which the Projects are constructed, but no costs will be charged to other members of the Commission.

7. The City of Plymouth is designated as the member responsible for contracting for the construction of the Plymouth Creek Project, and the engineer designated for preparation of plans and specifications is the Plymouth City Engineer, or other substitute engineers selected and retained by the City of Plymouth. Contracts for construction shall be let in accordance with the requirements of law applicable to the City of Plymouth. The Commission approves the Cooperative Agreement for Plymouth Creek Improvements dated as of September 17, 2009, with the City of Plymouth and authorizes and directs the execution thereof on behalf of the Commission by the Chair and Secretary.

8. The City of Golden Valley is designated as the member responsible for contracting for the construction of the Bassett Creek Project, and the engineer designated for preparation of plans and specifications is the Golden Valley City Engineer, or other

substitute engineers selected and retained by the City of Golden Valley. Contracts for construction shall be let in accordance with the requirements of law applicable to the City of Golden Valley. ~~The Commission approves the Cooperative Agreement for Bassett Creek Improvements dated as of September 17, 2009, with the City of Golden Valley and authorizes and directs the execution thereof on behalf of the Commission by the Chair and Secretary.~~

Adopted by the Board of Commission of the Bassett Creek Watershed Management Commission the 17th day of September, 2009.

9/17/09
Chair

ATTEST:

Pauline A. Langsten 9/17/09
Secretary

Item 6C.

City of Plymouth

Adding Quality to Life

September 7, 2010

Ms. Amy Herbert, Recording Administrator
BASSETT CREEK WATERSHED MANAGEMENT COMMISSION
c/o Barr Engineering Company
4700 West 77th Street
Minneapolis, MN 55435-4803

SUBJECT: WEST MEDICINE LAKE PARK POND IMPROVEMENTS aka
PLYMOUTH CREEK WATER QUALITY PONDS PROJECT
CITY PROJECT NO. 3105

Dear Ms. Herbert,

Enclosed you will find documentation of completed design, wetland mitigation, and construction expenses for the "West Medicine Lake Park Pond Improvements " aka the "Plymouth Creek Water Quality Ponds Project" totaling $850,557.45. The City has received reimbursement from:

Bassett Creek Watershed:	$501,475.74
Three Rivers Park District:	$100,000.00
Metropolitan Council:	$50,000.00
Total:	$651,475.74

Total project costs as of September 7, 2010 are $850,557.45. The attached Table 1 indicates all invoices received to date. Items noted with an "*" are included in the current request for reimbursement of $199,081.71 from the Bassett Creek Watershed Management Commission (BCWMC) per the terms of the Cooperative Agreement for the West Medicine Lake Park Pond Improvements dated April 19, 2007 and Addendum to Cooperative Agreement for the West Medicine Lake Park Pond dated September 18, 2008.

Construction is substantially complete as of September 7, 2010. Final project closeout is dependant upon vegetation establishment and is anticipated later this year. Reimbursement to the City should be sent to my attention at:

Derek Asche
Engineering Department
Plymouth City Hall
3400 Plymouth Blvd.
Plymouth, MN 55447

Thank you again for your support on this project. If you have any questions regarding the submission, please contact me at 763-509-5526.

Sincerely,

Derek Asche
Water Resources Manager

enc: Photos
Design
Cooperative Agreement
Addendum to Cooperative Agreement
Invoices

Table 1. Design, Wetland Mitigation, and Construction Costs through September 7, 2010.

Design Costs

Date	Vendor	Description	Amount
12/22/2005	Barr Engineering Co.	P8 Model	$261.37
12/23/2005	Schoell and Madson	Topographic Survey	$8,929.99
1/20/2006	Schoell and Madson	Topographic Survey	$6,020.01
1/30/2006	Barr Engineering Co.	P8 Model	$2,307.87
2/27/2006	Barr Engineering Co.	P8 Model	$1,150.00
2/27/2006	STS Consultants	Geotechnical Services	$3,904.47
3/23/2006	Barr Engineering Co.	P8 Model	$5,709.80
3/31/2006	Barr Engineering Co.	P8 Model	$170.96
4/7/2006	STS Consultants	Geotechnical Services	$3,651.53
5/12/2006	Schoell and Madson	Topographic Survey	$2,298.75
5/19/2006	Barr Engineering Co.	P8 Model	$5,580.27
6/16/2006	Barr Engineering Co.	P8 Model	$3,418.00
7/1/2006	Kjolhaug Env. Serv.	Wetland Delineation	$1,774.73
7/14/2006	Barr Engineering Co.	P8 Model	$801.73
10/13/2006	Kjolhaug Env. Serv.	Wetland Delineation	$957.54
10/31/2007	Wenck Associates	Engineering Services	$2,167.50
11/30/2007	Wenck Associates	Engineering Services	$4,083.28
12/31/2007	Wenck Associates	Engineering Services	$16,930.41
1/31/2008	Wenck Associates	Engineering Services	$8,133.30
2/8/2008	Kjolhaug Env. Serv.	MN RAM	$1,318.80
2/29/2008	Wenck Associates	Engineering Services	$8,599.00
3/31/2008	Wenck Associates	Engineering Services	$10,841.21
4/4/2008	Westwood Prof. Serv.	Wetland Replacement Plan	$1,909.00
4/30/2008	Wenck Associates	Engineering Services	$1,165.00
5/1/2008	Westwood Prof. Serv.	Wetland Replacement Plan	$1,983.00
6/5/2008	Westwood Prof. Serv.	Wetland Replacement Plan	$448.00
6/30/2008	Wenck Associates	Engineering Services	$492.00
7/8/2008	Westwood Prof. Serv.	Wetland Replacement Plan	$407.00
7/31/2008	Wenck Associates	Engineering Services	$1,139.50
8/8/2008	Westwood Prof. Serv.	Wetland Replacement Plan	$4,426.49
10/2/2008	Westwood Prof. Serv.	Wetland Replacement Plan	$2,464.74
11/26/2008	Westwood Prof. Serv.	Wetland Replacement Plan	$2,633.50
11/30/2008	Wenck Associates	Engineering Services	$1,098.14
12/4/2008	MnDNR	Permit Application Fee	$1,000.00
12/31/2008	Wenck Associates	Engineering Services	$391.30
1/6/2009	Westwood Prof. Serv.	Wetland Replacement Plan	$46.00
1/30/2009	Westwood Prof. Serv.	Weltand Replacement Plan	$540.50
1/31/2009	Wenck Associates	Engineering Services	$305.80
2/28/2009	Wenck Associates	Engineering Services	$2,202.70
3/3/2009	Westwood Prof. Serv.	Wetland Replacement Plan	$264.50
3/31/2009	Wenck Associates	Engineering Services	$918.40
4/30/2009	Wenck Associates	Engineering Services	$1,262.80
5/31/2009	Wenck Associates	Engineering Services	$375.00
6/30/2009	Wenck Associates	Engineering Services	$5,626.95
7/10/2009	Westwood Prof. Serv.	Wetland Replacement Plan	$805.00
7/15/2009	Reed Business Information	Advertisment for Bids	$159.90
7/22/2009	Reed Business Information	Advertisment for Bids	$159.90
7/31/2009	Westwood Prof. Serv.	Wetland Replacement Plan	$1,237.16
7/31/2009	Wenck Associates	Engineering Services	$342.06
9/9/2009	Westwood Prof. Serv.	Wetland Replacement Plan	$230.00
11/30/2009	Wenck Associates	Engineering Services	$183.44
8/31/2010	Arrowhead Environmental	Wetland Monitoring	$1,000.00 *
		Total Design Costs:	**$134,228.30**

Wetland Mitigation Costs

Date	Vendor	Description	Amount
7/8/2009	Don Bursch	Wetland Mitigation Credits	$30,000.05
8/21/2009	BWSR	Wetland Mitigation Fees	$20,189.68
9/4/2009	Don Bursch	Wetland Mitigation Credits	$272,916.19
6/30/2009	BWSR	Wetland Mitigation Fees	$1,000.00
		Total Wetland Mitigation:	**$324,105.92**

Construction Costs

Date	Vendor	Description	Amount
2/1/2010	MN Dirt Works	Pond Construction	$194,141.52
3/9/2010	MN Dirt Works	Pond Construction	$188,167.45 *
7/30/2010	MN Dirt Works	Pond Construction	$9,914.26 *
		Total Construction Costs:	**$392,223.23**

Grand Total:	**$850,557.45**

*These items are included in the current request for reimbursement

Item 7A

Memorandum

To: Bassett Creek Watershed Management Commission
From: Technical Advisory Committee
Subject: September 2, 2010 TAC Meeting
Date: September 14, 2010

The Technical Advisory Committee (TAC) met on September 2, 2010. The following TAC members, city representatives, staff, and others attended the meeting:

City	TAC Members/Alternates	Other City Representatives
Crystal	Tom Mathisen	
Golden Valley	Jeaninne Clancy, Jeff Oliver	Chair Linda Loomis
Medicine Lake	Vacant position	
Minneapolis	Lois Eberhart	
Minnetonka	Liz Stout	
New Hope	Guy Johnson, Jason Quisberg	Comm. John Elder
Plymouth	Derek Asche	
Robbinsdale	Absent	
St. Louis Park	Laura Adler	
BCWMC Staff	Geoffrey Nash, Karen Chandler, Greg Wilson	
Also in attendance were Rachael Crabb, Minneapolis Park & Recreation Board and Jack Frost, Met Council		

The Technical Advisory Committee (TAC) directed staff to forward the following recommendations to the Commission for its consideration. This memorandum presents the recommendations relating to 1) standardization of water quality data collection procedures, 2) Sweeney Lake outlet and how this project fits into the CIP process, 3) the status of planning for the BCWMC's Third Generation Plan, and 4) a noise wall/66-inch culvert replacement project in New Hope, and 5) other business, including the next scheduled meeting date for the TAC.

1. Standardization of Data Collection Procedures

Greg Wilson, Barr Engineering, made a presentation on Barr's water quality data collection procedures. This issue is pertinent because of the possibility that the MPCA's new stormwater permits for MS4s will require monitoring.

Recommendations On the Data Collection Standardization Issue:

The member cities rely on the BCWMC to perform monitoring in the watershed. The cities do not conduct their own sampling programs, although the MPRB operates the Bassett Creek WOMP station. It was a concern to the TAC that CAMP sampling protocol is different than standard sampling protocol for lakes and that some lakes in the watershed had been placed on the MPCA's impaired waters list, based on CAMP data. Greg Wilson explained that the MPCA does not use solely CAMP data to put a lake on the impaired waters list, but CAMP data might be used with other data to support such a listing. The TAC had no recommendations at this time.

The TAC plans to have a discussion at a later date concerning standardization of stormwater model software.

2. Sweeney Lake Outlet and How it Fits in the CIP Process

The TAC was provided with two Barr memos related to the Sweeney Lake outlet. The memos discuss the construction of a new control structure on the outlet from Sweeney Lake and consider adding the replacement of the outlet structure to the Bassett Creek Watershed Management Commission's CIP.

Recommendations On the Sweeney Lake Outlet CIP Issue:

The TAC considers the replacement of the Sweeney Lake outlet structure a CIP project. It is not clear whether it would constitute a major or minor plan amendment. The TAC asked whether or not Barr had sent a letter to the DNR requesting that the project be eligible for funding through their Dam Safety Program. The issue will be raised again at a future TAC meeting.

3. Third Generation Water Management Plan Framework

In 2014, the BCWMC's current Watershed Management Plan will expire. The BCWMC will need to submit and gain approval of a revised third generation Watershed Management Plan prior to the plan's expiration. Watershed Management Plans span ten-year periods.

Recommendations On the Planning Issue:

The TAC discussed how new issues will be included for consideration in the planning process. The Administrator will tabulate the cities' responses to the questionnaire he sent to them soliciting their input on the first two broad categories of issues: 1) Education & Public Involvement and 2) Erosion & Sediment Control. The TAC will return their responses by September 17 and the Administrator will tabulate all responses. The questionnaire with the next set of issues will be sent to the TAC this week.

4. New Hope Noise Wall and 66-inch Culvert Replacement Project

This issue is related to a MnDOT noise wall construction project planned for 2011 in New Hope. A culvert replacement project could be constructed at the same time. The culvert carries the entire flow of the North Branch Bassett Creek and is therefore part of the BCWMC trunk system. In addition, the city of New Hope is considering constructing a water feature on the east side of the sound wall. The TAC discussed how there could be an opportunity for the City of New Hope to collaborate with the City of Plymouth to incorporate a water feature on the east side of Highway 169 into the NB-07 (NL-2) pond CIP project.

Recommendations On the New Hope Issue:

- The TAC recommended that New Hope make a formal request to the BCWMC to add the culvert replacement project to the BCWMC CIP.
- The TAC recommended that the City of New Hope collaborate with the City of Plymouth to possibly incorporate a water feature on the east side of Highway 169 into the BCWMC's NB-07 (NL-2) CIP project

• Other Business

The Administrator mentioned that he had forwarded Minnesota Department of Health, Groundwater Protection Grant information to the TAC representatives.

The TAC determined that the next TAC meetings should be Thursday, October 7. Future meetings are scheduled for November 4 and December 2.

7Bii,

Minnesota Pollution Control Agency
520 Lafayette Road North | St. Paul, MN 55155-4194 | 651-296-6300 | 800-657-3864 | 651-282-5332 TTY | www.pca.state.mn.us

August 26, 2010

Ms. Linda R. Loomis
Chair, Bassett Creek Watershed Management Commission
City of Golden Valley
7800 Golden Valley Road
Golden Valley, MN 55427

The following are responses to BCWMC comments dated May 28, 2010 on the draft Medicine Lake TMDL dated February 2010.

Comment #1: Section 4.2, Wasteload Allocations, P 21: If the 27 pounds of phosphorus load due to the Honeywell discharge is dissolved it will not be removed by downstream settling basins and it should be mitigated if the discharge continues.

Response: The TMDL has been developed on a total phosphorus basis. The discharge from the Honeywell facility was assumed to experience similar removal in ponds as watershed runoff contributions. Additional monitoring of the discharge and assessment of its transport and fate may be conducted that indicate mitigation may be needed to result in 6 lbs/year of total phosphorus loads to Medicine Lake from the facility. Additional discussion has been added to Section 4.2 of the TMDL and Section 1.5 of the Implementation Plan to clarify this issue.

Comment #2: Section 5, Monitoring: The TMDL states that "*BMP implementation monitoring will be conducted by the Bassett Creek Watershed Management Commission, as the lead entity in the categorical TMDL.*" The TMDL should indicate the Commission will coordinate the sampling and collection of data.

Response: Section 5 of the TMDL and Section 6 of the Implementation Plan have been revised to indicate BMP implementation tracking will be coordinated by the Commission.

Comment #3: The TMDL should indicate that any comprehensive watershed monitoring program that is proposed to measure the progress of the Implementation Plan to reduce watershed loads will be scheduled after 2017, since come of the BMPs that are part of the implementation strategy are not scheduled to be completed until 2017.

Response: Section 5 of the TMDL and Section 6 of the Implementation Plan have been revised to indicate that the scheduling of an initial watershed monitoring effort should consider the timing of implementation activities and occur approximately five years after approval of the TMDL.

Comment #4: The TMDL proposes a monitoring program with five elements: in-lake

monitoring, watershed monitoring, individual BMP monitoring, aquatic macrophyte monitoring, and sediment phosphorus monitoring. The recommended monitoring program in the TMDL should be limited to annual in-lake monitoring which will provide adequate information to determine if the water quality standards for the lake are being met.

Response: The components of the proposed monitoring program provide valuable information to further understand conditions in the lake, factors affecting water quality, and trends and results of BMP implementation. Section 5 of the TMDL and Section 6 of the Implementation Plan have been revised to indicate that BMP implementation tracking, in-lake monitoring, and aquatic macrophyte monitoring "*will*" be conducted annually, while watershed load monitoring and sediment phosphorus assessments "*should*" or "*may*" be conducted.

Comment #5: The TMDL Implementation Plan should acknowledge that BMPs will need to be implemented by Mn/DOT and Hennepin County to meet watershed load reductions.

Response: The TMDL specifies a WLA for Mn/DOT and Hennepin County. The TMDL does not include a detailed assessment of the existing contributions from these entities. The MS4 permits for these entities will require that the WLAs be met. The specific monitoring, modeling, and/or potential BMPs required to attain and/or demonstrate compliance with the WLAs have not been identified in the TMDL or Implementation Plan. Those efforts will be addressed through the MS4 permitting process. Sections 4 and 6 of the Implementation Plan and Sections 5 and 7 of the TMDL have been revised to acknowledge Mn/DOT and Hennepin County in the implementation of BMPs.

Comment #6: Some of the load reductions due to BMPs completed by the City of Plymouth as part of their 2004 Implementation Plan that totaled 1,088 pounds of reduced load are not reflected in the 2004 through 2007 data used in the development of the TMDL because they were completed during or after 2007. The TMDL should clarify whether watershed load reductions associated with shoreline restoration and the repair of erosion sites by the City of Plymouth have been accounted for in the alternatives and, if not, they should be estimated and included in all of the identified alternatives.

Response: The TMDL and WLA are based on the loading capacity of Medicine Lake and are not dependent on the assessment of existing loadings. The TMDL and the WLA are the requirements that must be met. The load reductions presented in the TMDL and Implementation Plan are based on watershed conditions in 2007. BMPs implemented following 2007 have not been accounted for in the assessment of reductions needed to meet the WLA. If monitoring or modeling of BMPs implemented since 2007 can demonstrate reduced loadings, those should be considered in the assessment of additional BMPs required to meet the WLA. Sections 4 and 7 of the TMDL and Sections 1.5 and 2 of the Implementation Plan have been revised to clarify this issue.

Comment #7: The TMDL Implementation Plan should acknowledge that there is a lag time for BMPs that are implemented to achieve their full reduction potential.

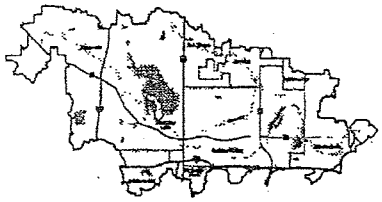
Response: Section 5 of the Implementation Plan has been revised to include consideration of potential lag time of BMPs to achieve full load reduction potential in the adaptive management decision-making process.

If I may be of further help, please call me at 651-757-2205 or E-mail at Brooke.Asleson@state.mn.us

Sincerely,

Brooke C. Asleson
Watershed Project Manager
Regional Division-Watershed Section

BA:kb



Planning Process Flowchart

Commission
Appoints Second Generation Plan Committee

↓

Second Generation Plan Committee
Prepares Draft Planning Process
Prepares Draft Work Plan
Develops Proposed Planning Organization
Develops Draft Planning Handbook

↓

Commission
Reviews and Approves Planning Process
Reviews and Approves Work Plan
Reviews and Approves Handbook
Creates Advisory Groups and Defines Responsibilities

↓

Steering Committee
Develops Agendas, Issues Papers for: Policy Advisory Group (PAG), Technical Advisory Group (TAG), and Citizens Advisory Group (CAG)
Prepares Background Information on Work Tasks for Advisory Groups
Provides Direction for Advisory Groups
Prepares Draft Implementation Strategies
Prepares Draft Capital Improvement Plan
Provides Periodic Updates to Commission
Obtains Periodic Input From Commission

↓

Citizens Advisory Group
Develop Public Information Program
Hosts Public Meetings on Planning Process

→

Technical Advisory Group
Address Technical Issues

→

Policy Advisory Group
Develop Policies
Establishes Performance Monitoring
Financing Plan

↓

Steering Committee
Review Policies and Strategies Proposed by TAG, CAG, PAG
Drafts Plan

↓

Commission
Coordinate Agency Stakeholder Review
Respond to Comments
Review/Revise Plan
Conduct Public Hearing on Proposed Plan
Approve Plan

7D.

Bassett Creek Water Management Commission
Second Generation Plan Steering Committee
Advisory Group Membership

Steering Committee

Committee Members	Stakeholder
Lee Gustafson	BCWMC, Steering Committee Chair
Ron Quanbeck	Plymouth
Mike Rardin	St. Louis Park
Bill Deblon	Robbinsdale
Mike Welch	Minneapolis
Lee Gustafson	BCWMC, Policy Advisory Group Chair
Fred Moore	BCWMC, Technical Advisory Group Chair
John O'Toole	BCWMC, Citizens Advisory Group Chair
BCWMC Staff (as appropriate)	

Bassett Creek Water Management Commission
Second Generation Plan Steering Committee
Advisory Group Membership (cont.)

Citizens Advisory Group

	Nominees	Stakeholder
CAG Chair	John O'Toole	BCWMC
Citizen Representative(s) (up to 9)	Rita Nystrom	Crystal
	Alan Kuentz	Golden Valley
	David Fellman	Golden Valley
	Ed Cochrane	Medicine Lake/AMLAC (1)
	David Stack	Minneapolis
	Ed McRoberts	Minneapolis
		Minnetonka
		New Hope
	Karen Chesebrough	Plymouth
	Sue Weinberg	Robbinsdale
	Mark Oestreich	St. Louis Park
City Staff (5 to 9)		Crystal
	Al Lundstrom	Golden Valley
		Medicine Lake
	Lois Eberhart	Minneapolis
	Joan Post	Minnetonka
		New Hope
	Helen LaFave/Margie Vigoren	Plymouth
	Opted Out	Robbinsdale
	Lynn Schwartz	St. Louis Park
Agencies (open) (2)	~~Doug Snyder Phil Belfiori~~ Brad Wozney	MN Board of Water & Soil Resources
	Judy Sventek	Metropolitan Council
	Ron Struss	MN Board of Water & Soil Resources
BCWMC Staff (as appropriate)		

(1) Association of Medicine Lake Area Citizens
(2) Non-voting members

Bassett Creek Water Management Commission
Second Generation Plan Steering Committee
Advisory Group Membership (cont.)

Technical Advisory Group

	Nominees	Stakeholder
TAG Chair	Fred Moore	BCWMC
City Staff (5 to 9)	Tom Mathisen	Crystal
	Jeff Oliver	Golden Valley
		Medicine Lake
	Patrick Wrase	Minneapolis
	Jennifer Posma	Minnetonka
	Guy Johnson	New Hope
	Shane Missaghi	Plymouth
	Bill Deblon	Robbinsdale
	Carlton Moore	St. Louis Park
Citizen Representative(s) (up to 5)	Paulette Magnuson	Crystal
	Bob Mayeron	Golden Valley
	Ed Silberman	Golden Valley
		Medicine Lake
	Lisa Goddard	Minneapolis
		Minnetonka
		New Hope
	Connie Fortin	Plymouth
	Don Maxwell	Plymouth/AMLAC (1)
	Opted out	Robbinsdale
	Ken Gothberg	St. Louis Park
Agencies (1 each) (2)	~~Doug Snyder~~ ~~Phil Belfiori~~ Brad Wozney	MN Board of Water & Soil Resources
	Tom Hovey	MN Department of Natural Resources
	~~Lawrence Zdon~~ Timothy Larson	MN Pollution Control Agency
	Dennis Larson/Katie Heinz	MN Department of Transportation
	Terry Bovee	MN Department of Health
	Judy Sventek	Metropolitan Council
	Mark Zabel	Department of Agriculture
	Steve Hobbs	Hennepin Conservation District
	Joel Settles	Hennepin County
	John Barten	Hennepin Parks
	David Himmerich	US Army Corps of Engineers
BCWMC Staff (as appropriate)		

(1) Association of Medicine Lake Area Citizens
(2) Non-voting members

Bassett Creek Water Management Commission
Second Generation Plan Steering Committee
Advisory Group Membership (cont.)

Policy Advisory Group

	Members	Stakeholder
PAG Chair	Lee Gustafson	BCWMC
City Staff (9)	Anne Norris	Crystal
	~~Bill Joynes~~ Tom Burt	Golden Valley
		Medicine Lake
	~~Jodi Polzin~~ Patrick Wrase	Minneapolis
	Lee Gustafson	Minnetonka
	Dan Donahue	New Hope
	Ginny Black	Plymouth
	~~Dennis Kraft~~ Marcia Glick	Robbinsdale
	~~Ken Gothberg~~ Sally Velick	St. Louis Park
BCWMC Staff (as appropriate)		

Item 7F

BCWMC Education & Public Outreach Committee Meeting

September 10, 2010 – 9:00 A.M. – Plymouth City Hall

Members present: Margie Vigoren, Bonnie Harper-Lore, Ted Hoshal and Pauline Langsdorf

Education Outreach Plan

We continued discussion and planning of the BCWMC Education Outreach Plan. As we work through the planning process we are reviewing the Goals and Public Outreach sections of the Second Generation Plan. We are also reviewing the West Metro Watershed Alliance (WMWA) plan which was recently approved by watersheds that belong to WMWA.

BCWMC History Project

We discussed how to proceed with this project and some of the forms the finished product might take. Ted had prepared and shared a number of resources to be checked as we proceed with this project. This committee will meet again following the September BCWMC meeting in the same room at Golden Valley City Hall. This will permit others at the meeting to stay and offer their ideas if they have time to stay past the time of the commission meeting.

The next BCWMC Education/Public Outreach meeting will be on October 8, at 9:00 A.M. at Plymouth City Hall.

Notes by Pauline Langsdorf

Item 8B

Geoff Nash, P.G.
Watershed Consulting, LLC

Administrator's Report
Bassett Creek Watershed Management Commission
September 23, 2010

1. Received $550 donation from Caroline Amplatz, Caroline's Kids, for lab analytical on second CAMP location on Sweeney Lake.
2. Scheduled Sweeney Lake stakeholders meeting for September 30, here in Golden Valley. Worked with Brooke Asleson , MPCA on agenda. Stakeholders meeting scheduled for September 30.
3. Wrote informational letter to Commissioners regarding Hennepin County funding options for Joint Powers Watershed Management Organizations' CIP levies.
4. Submitted BCWMC Policy Manual to Administrative Service Committee for comment.
5. Met with Administrative Service Committee on September 15 to discuss Policy Manual.
6. Submitted response letter to City of Minneapolis for Comprehensive Plan review.
7. Wrote TAC meeting agenda and attended TAC meeting on September 2.
8. Wrote TAC meeting memo and solicited ideas for new issues.
9. Wrote letter to Dave Hanson to explain why BCWMC did not respond to all of his comments on the Sweeney Lake TMDL.